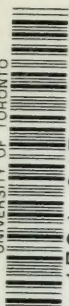


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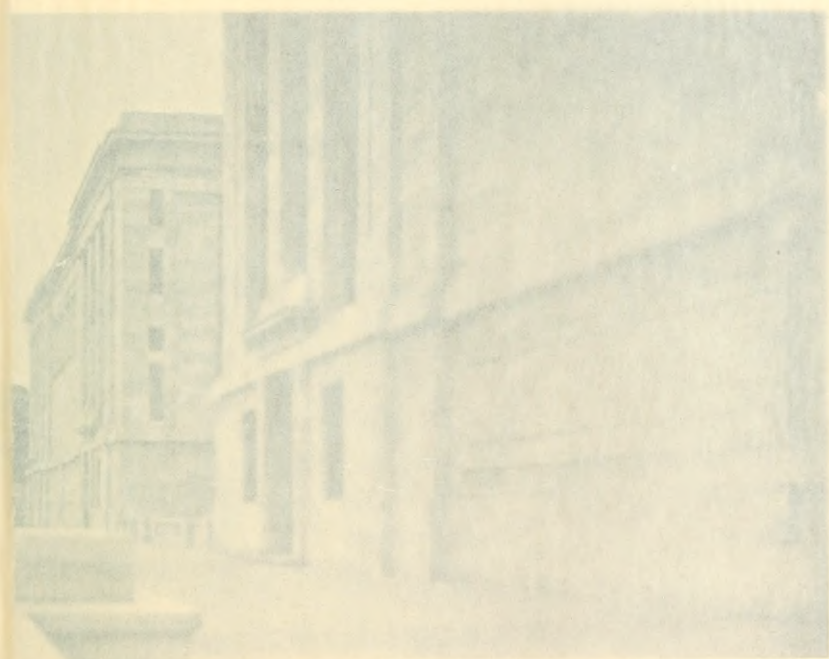


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THE
HARVARD MEDICAL SCHOOL



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INTRODUCTION.

THE history of the Harvard Medical School presented herewith had its inception in two votes of the Faculty of Medicine under date of January seventh and February fourth, 1905. The general outline suggested by a special committee appointed for the purpose was approved by the Corporation in a letter submitted to the Faculty of Medicine on April first, 1905.

The plan adopted includes the attempt to present the history of the School by Departments. With one exception the history of each Department is written by or under the direct supervision of its Head, and these accounts are arranged in historical sequence. The exception is that of Chemistry. The plan of the book was outlined and work begun upon it during the prolonged and fatal illness of Prof. Edward S. Wood. Dr. James C. White, Professor Emeritus of Dermatology, and formerly Professor of Chemistry, has been good enough to write the sketch of that subject. By the method adopted it is possible to follow the growth of the School from a new point of view, and to note when the demands for new branches of medical instruction have been satisfied.

The "Department" in the Medical School has always had a somewhat different significance from that attributed to it in other parts of the University, and has been, loosely, held to indicate a branch of instruction of sufficient importance to have its Head rank higher than an annual appointment. Some years ago the Faculty expressed its approval of a grouping of allied Departments into Divisions, but the only one yet in existence is the Division of Surgery.

Changes and expansion in instruction are going on all the time. Some have been begun since this volume was undertaken, as is

instanced by the establishment of the Chair of Comparative Anatomy and the appointment of Professor Minot to organize the Department. Indeed the immediate future may be looked upon as likely to be, in every way, a time of great activity and change in the teaching given by the School. Definite movements are on foot to enlarge the scope and variety of the instruction offered to the medical students—to provide instruction of a primary nature for those who may be interested in applied biology—and to develop courses of the highest type that may lead to other University honors than the Doctorate of Medicine. For all these activities the new buildings offer ample space and facilities, and the friends of the School seem justified in looking forward to the development of medical teaching and research to a form and extent that has not been before realized.

Perhaps the most important recent action taken by the Faculty of Medicine is that by which a large addition to its numbers is made with the opening of the new year. Appointments for more than one year carry with them a seat in the Faculty and fourteen annual appointments have been made to extend over three years, so that the holders enter the Faculty upon the beginning of the new term. In this instance it is noticeable that a large majority of the promotions represent the clinical as contrasted with the laboratory branches of instruction.

The following pages form a summary of the growth of the School for one hundred and twenty-four years up to this present eventful point in its career. The use of portraits of individuals has been governed by the rule that the first occupant of each chair should be shown, provided he be not now alive. It has, however, been impossible to discover any portrait of Dr. Aaron Dexter, the first Professor of Chemistry and Materia Medica.

DATES OF THE ESTABLISHMENT OF CHAIRS.

(The dates here given are taken from the Quinquennial catalogue of Harvard University—edition of 1905. In some cases they differ from those in the text. When this is so reliance has been placed by the writers upon the catalogues of the Medical School which, before 1871, did not always agree in nomenclature with the records of the University.)

ANATOMY AND SURGERY	1782
(Hersey Professorship of Anatomy and Surgery after 1791.)	
ANATOMY AND PHYSIOLOGY	1847
(Parkman Professorship of Anatomy and Physiology. Parkman Professorship of Anatomy after 1871.)	
PHYSIOLOGY	1866
(George Higginson Professorship after 1902.)	
THE THEORY AND PRACTICE OF PHYSIC	1783
(Hersey Professorship after 1791.)	
CHEMISTRY AND MATERIA MEDICA	1783
(Erving Professorship after 1791. Lectureship of Materia Medica and Botany in 1818. Professorship of Materia Medica in 1818.)	
OBSTETRICS AND MEDICAL JURISPRUDENCE	1815
(Subjects separated in 1877.)	
SURGERY	1835
(Professorship of the Institutes of Surgery and of Clinical Surgery from 1835 to 1847. Moseley Professorship after 1898.)	
PATHOLOGICAL ANATOMY	1847
(Shattuck Professorship of Morbid Anatomy from 1854 to 1879. Shattuck Professorship after 1879.)	
CLINICAL MEDICINE	1854
(Jackson Professorship after 1858.)	
PHYSIOLOGY AND PATHOLOGY OF THE NERVOUS SYSTEM,	1864-1867
DERMATOLOGY	1871
OPHTHALMOLOGY	1871
(Williams Professorship after 1898.)	
MENTAL DISEASES	1871-1885
HYGIENE	1871

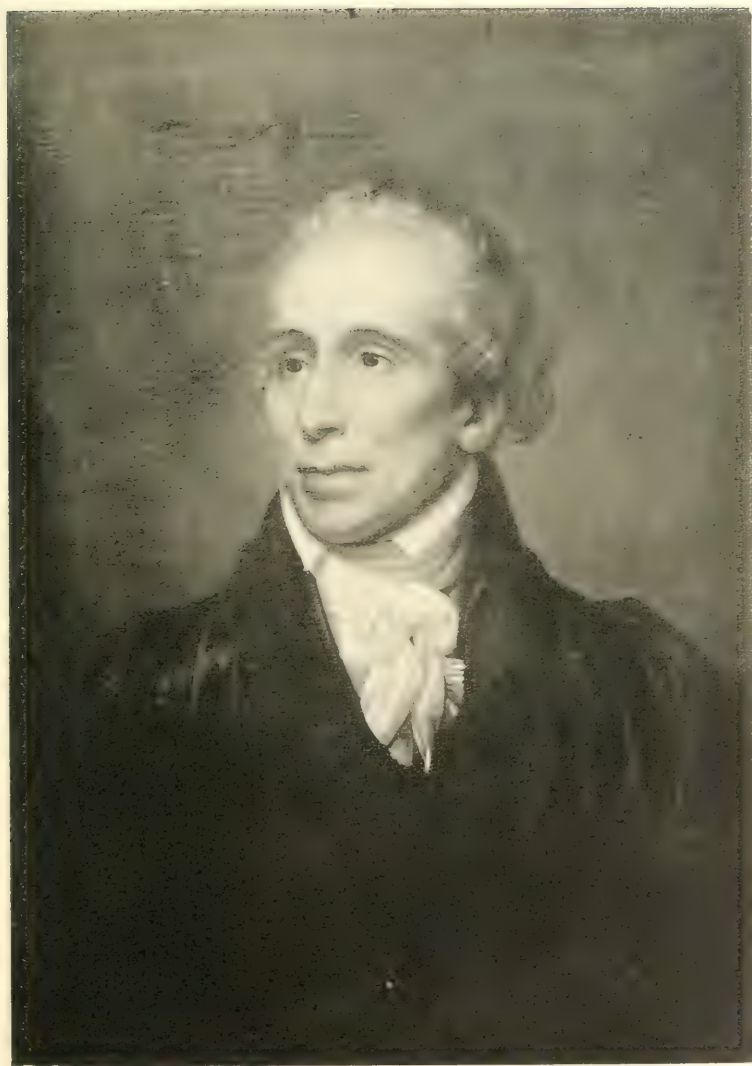
HISTOLOGY AND EMBRYOLOGY	1887
(Professorship of Histology and Human Embryology 1892-1906.)	
LARYNGOLOGY	1888
(Assistant Professorship in 1882.)	
GYNECOLOGY	1888
(Assistant Professorship in 1882.)	
OTOLOGY	1888
BACTERIOLOGY	1891
NEUROLOGY	1893
(Officially is Diseases of the Nervous System.)	
ORTHOPEDICS	1893
(Orthopedic Surgery from 1903.)	
PEDIATRICS	1893
COMPARATIVE PATHOLOGY	1896
(George Fabyan Professorship from 1896.)	
PHARMACOLOGY AND THERAPEUTICS	1900
COMPARATIVE ANATOMY	1902
(James Stillman Professorship from 1902. Chair not filled until 1906.)	
CONTAGIOUS DISEASES	1903
WARREN ANATOMICAL MUSEUM	1847
(The date of the appointment of the first Curator.)	



BUILDINGS OCCUPIED BY THE HARVARD MEDICAL SCHOOL.

- 1782. Harvard Hall, Cambridge. The first lectures were given in the basement of this building.
- 1783. Holden Chapel, Cambridge. Occupied as soon after the opening of the School as it could be fitted.
- 1810. Forty-nine Marlborough street, Boston (now 400 Washington street). No illustration of this building can be found.
- 1816. The new building on Mason street, Boston. The first constructed especially for the School.
- 1847. North Grove street, adjoining the Massachusetts General Hospital.
- 1883. Six hundred and eighty-eight Boylston street; "expected to be the home of medicine for generations."
- 1906. Longwood avenue, Boston. Dedicated September twenty-fifth and twenty-sixth, 1906; occupied by the School at the opening of the term, September twenty-seventh, 1906.

THE DEPARTMENTS.



THE DEPARTMENT OF ANATOMY.

1782.

Dr. John Warren, the first Professor of Anatomy and Surgery (after 1791 Hersey Professor), was appointed November twenty-second, 1782, and inducted into office on October seventh, 1783. He was not only a rising surgeon but an enthusiastic student of anatomy. He must have been largely a self-taught man, though he received instruction from his brother, Dr. Joseph Warren (later General Warren), during two years. In his student days at Harvard he had been a leading spirit of an Anatomical Club, the members of which dissected and demonstrated the structures of the lower animals and studied the bones of the human skeleton. It is certain that during and after the War of Independence he had opportunities to dissect human bodies. He profited so much by these studies that in 1780 he gave a course of anatomical demonstrations to medical men at the Military Hospital at Boston, which he was asked to repeat the following year. This undoubtedly led to his appointment by Harvard and perhaps even to the establishment of a Medical School by the University.

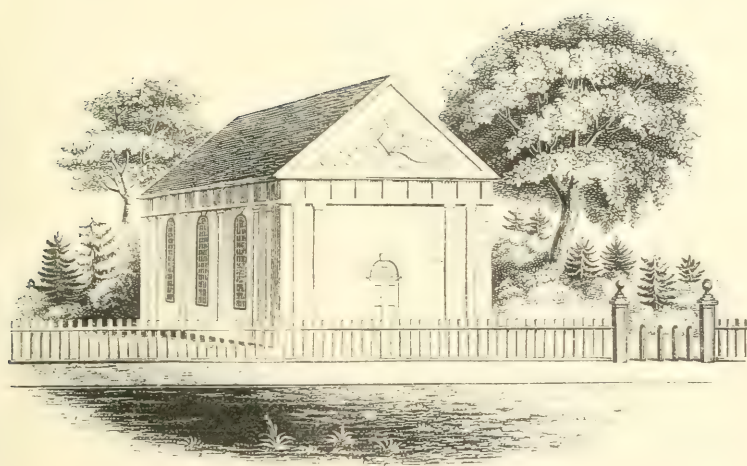
The first course of lectures which he gave as Professor took place in the autumn of 1783, lasting six weeks. The Medical School was in Holden Chapel in the College Yard, where it remained for more than a quarter of a century. Dr. John Warren was an excellent lecturer, attractive to the students by his good voice and great earnestness. According to Dr. Holmes "the driest bone of the human body became in his hands the subject of animated and agreeable description." Dr. James Jackson wrote after his death that the most peculiar charms of his teaching "were derived from the animation of delivery, from the interest he displayed in the subject of his discourse, and from his solicitude that

every auditor should be satisfied both by his demonstrations and by his explanations." It is needless to say of one blessed with these advantages that he rarely used notes. His duties, as we infer from a vote of the Corporation, were to "demonstrate the anatomy of a human body with physiological observations and explain and perform a complete system of surgical operations."

A list of Dr. Warren's lectures for 1790, which course began October sixth and ended November seventeenth, would imply that they were anatomical rather than surgical, though doubtless applications of anatomy to surgery were not wanting. They cover the field very creditably. One is struck by the wisdom with which the viscera are brought into the front rank at the expense of the muscles and vessels. Dissection began that year on October fifteenth.

Cambridge was hard of access in those days and his lectures, which lasted two or three hours, were a great strain upon him. In 1809 his son, Dr. John Collins Warren, was appointed Adjunct Professor, which must have made his burden more tolerable. A further relief was given him by the removal the following year of the School to Boston. Instruction by this time had been lengthened to eight weeks, and was further extended the following year, when it began on the first Wednesday of November and ended on that of February. The anatomical course was now split into two, one for medical students on anatomy and surgery in the autumn and winter, and one of twenty-six lectures on anatomy, given in the spring to students of the undergraduate department.

It is certain that dissection was practised at this period and also that at times the difficulty of getting bodies was very great, and that "body-snatching" was in vogue. Dr. John Collins Warren relates an adventure of this kind in which he took part, the happy result of which gave his father much satisfaction, alloyed as it was by anxiety for his son. His health was not strong and



one can imagine that anxieties of this kind in addition to his severe professional work may have shortened his life. We are told by Dr. Jackson that he was "particularly fearful of continuing in office till that period of life when men cease to be aware of the propriety of resigning responsible positions." Twice he resigned the professorship only to have his resignation twice declined, and finally he died in harness in 1815, in his sixty-second year.

On the death of John Warren his son John Collins Warren became Hersey Professor of Anatomy and Surgery. He brought to the place not only the experience of six years work as Adjunct Professor, but that of other years freely given. He had had the advantages of foreign study, was familiar with the teaching of anatomy in Europe, and was an experienced as well as an enthusiastic dissector. While it may be questioned whether his natural abilities as a teacher were as great as those of his father, he was undoubtedly a more highly educated man and brought to his duties an iron will determined to triumph over any natural difficulties in the way of success. His personality was a striking one. Strict with himself, he was exacting towards others. Although essentially a surgeon, he was devoted to anatomy as a science as well as an art, following it as faithfully as his large practice, his hospital work and his teaching of surgery would allow. He held the Hersey Professorship for thirty-two years. If we add to that the six years during which he was Adjunct Professor, and remember that he began to make dissections for his father in 1802, we may say (without including his student days) that he was actively engaged in anatomical pursuits for forty-five years.

Of the details of his teaching we know little. Conscious that he did not have the ease as a speaker which distinguished his father, he prepared himself with great care for his lectures and looked forward to them with anxiety. So busy a practitioner must have required help in preparing the dissections for his lectures, for

which he probably depended upon students and young graduates. In 1831 Dr. Winslow Lewis was made Demonstrator, a new office carrying a seat in the Faculty. This must be considered as a distinct advance in medical education. The list of the Demonstrators during Prof. J. C. Warren's time is as follows :

Winslow Lewis, 1831-1835 ; Nathaniel B. Shurtleff, 1835-1836 ; John Roby, 1836-1837 ; Winslow Lewis, 1837-1838 ; Jeffries Wyman, 1838-1840 ; Samuel Parkman, 1840-1849. Of these Dr. Lewis was remembered as a clever dissector (probably the same could be said of all), but Jeffries Wyman alone attained to a great reputation as an anatomist.

As implied above, Dr. Warren was an ardent dissector and as such had to secure subjects as best he could. There was no anatomy law, for we do not count as such the adding dissection to the capital punishment for murder. We have no complete history of how bodies were procured. We know, indeed, that body-snatching flourished ; but we do not know to what extent bodies, which a more enlightened civilization would have given to science, were procured by the connivance of officials, nor how many were brought into the State. In 1825 the Faculty voted to appropriate three hundred dollars annually to be at the disposition of the Professor of Anatomy for the purpose of encouraging the study of anatomy. Presumably no account of expenditures was required. That affairs were most unsatisfactory may be inferred from this passage in Dr. Warren's biographical notes : " Sometimes popular excitement was got up and the medical college threatened. I had reason at some periods to apprehend attacks on my dwelling-house. Whenever the lectures approached, a state of incessant anxiety came with them." An effort to obtain relief was made in 1825 when Dr. Warren and Dr. Jacob Bigelow were appointed a committee to draw up an act on dissection. We do not know what became of it ; but it is one of Harvard's great glories that through

the efforts of John C. Warren, Massachusetts on February twenty-eighth, 1831, passed the first anatomical law* in the United States, which preceded by one year the first one in Great Britain.

The essential features of this law are as follows: After decreeing penalties for the violation of graves, this act provides "that it shall be lawful for the Board of Health, Overseers of the Poor and Selectmen of any town in this Commonwealth and for the Directors of the House of Industry, Overseers of the Poor, and Mayor and Aldermen of the City of Boston — to surrender the dead bodies of such persons, except town paupers, as may be required to be buried at the public expense, to any regular physician, duly licensed, according to the laws of this Commonwealth, to be by said physician used for the advancement of anatomical science, preference being always given to the medical schools that now are, or hereafter may be by law established in this Commonwealth, during such portions of the year as such schools, or either of them, may require such subjects for the instruction of medical students, provided, always, that no such dead body shall in any case be so surrendered if, within thirty-six hours from the time of its death, any one or more persons claiming to be kin, friend, or acquaintance of the deceased shall require to have said body inhumed." It is then provided that bodies of strangers and travellers shall be exempt. The act declares further that the physician receiving the body shall give a bond that it shall be used only for anatomical science, and only in this Commonwealth "and so as in no event to outrage the public feeling," and that "the remains thereof shall be decently inhumed."

In 1834 the time to elapse before delivering a body was reduced

*This is sometimes referred to as the act of the Legislature of 1830, and so it is; for the Legislature came in in that year; but the act was passed in 1831, and, having been signed by the Governor, became law on the above date.

from thirty-six to twenty-four hours, and unclaimed town paupers were included. It is clear that while this law was a great advance from the mere fact that it legalized dissection, yet it was far from satisfactory on account of its being entirely dependent on the civil authorities to surrender the body or not. What actually occurred at this period we do not know. It is probable that Dr. Warren's influence in the community was sufficient, for a time at least, to have the spirit of the law observed; but we are told that later difficulties were opposed to its execution and the number of subjects was consequently reduced. In March, 1845, the law was amended in a radical manner, by inserting the word "shall," which made it mandatory on superintendents, etc., instead of simply permissive. It further provided that "no such body shall, in any case, be surrendered, if the deceased person, during his last illness of his own accord, requested to be buried." Such was the law during the remainder of Dr. Warren's professorship. Subsequent changes shall be considered later.

Dr. John C. Warren resigned his professorship in February, 1847, being then in his sixty-ninth year; but, at the request of the Corporation, continued in office until the end of the academic year. He was then made Emeritus Professor of Anatomy and Surgery.

The collection of specimens which Dr. Warren presented to the College in the autumn following his resignation, and which was named the Warren Anatomical Museum in honor of himself and of his father, is treated of elsewhere. That it was already very valuable may be inferred from the fact that it was stipulated that it should be perpetually insured for not less than ten thousand dollars.

One other gift from Dr. Warren must not be forgotten. He left a provision in his will that his body should be dissected and his skeleton placed in the School. It was doubtless to make clear that if he had done things which to many were repulsive, he had done

nothing to others which he would not have done to himself. His skeleton is still in the Museum which bears his name.

Although in practice a surgeon, Dr. Warren might worthily have filled the Chair of Anatomy had there been a distinct one for that branch. While eminently practical he was also truly scientific in his tastes, as is shown by his presidency of the Boston Society of Natural History, and his other affiliations to science, such as his private museum containing the mastodon skeleton.

On the resignation of John C. Warren in 1847, the Professorship of Surgery was made a distinct chair. The Hersey Professorship of Anatomy went to Cambridge, and Dr. Oliver Wendell Holmes was made Parkman Professor of Anatomy and Physiology, the chair being so named in honor of Dr. George Parkman. Dr. Holmes brought to his office the experience of having given two courses of anatomy at Dartmouth. He was thirty-eight years old when he began to teach at Harvard. He had acquired a literary reputation, and was in great request as a lecturer. He had already relinquished practice. A sympathetic and entertaining speaker, he was very attractive to the medical classes which continually passed before him for thirty-five years. At the time of his appointment he was undoubtedly well versed in the anatomy of the day, and was, moreover, a pioneer in microscopy. During his time great changes occurred in the School. Gradually the summer school became more important, and in 1871 the present system of two terms, extending throughout the academic year, was introduced. In the earlier times Dr. Holmes lectured five times a week in the winter term at one o'clock, to an exhausted class unfit to be taught anything. It is hard to believe that any one but Dr. Holmes could have been tolerated at that hour.

Dr. Cheever wrote of him: "As a lecturer he was accurate, punctual, precise, unvarying in patience over detail, and though not an original anatomist in the sense of a discoverer, yet a most

exact descriptive lecturer ; while the wealth of illustration, comparison, and simile he used was unequalled." The mesentery was compared to the shirt-ruffles of a former generation, a sweat-gland to a fairy's intestine, and the brain and its membranes to an English walnut in its shell. Less brilliant, but more instructive than his lectures, were his very careful recitations on osteology. Perhaps his most enthusiastic work was given to the microscope, but he gave his attention more to the construction of the instrument and to the resolving powers of lenses than to the subject matter of the science. He began in the summer of 1858 "a course of lectures illustrating the use of the microscope and microscopic anatomy," which he gave for many years. In 1871 physiology was made a separate department, Dr. Holmes' title becoming Parkman Professor of Anatomy. After this he did little beyond giving his lectures and some recitations. He was deservedly popular with the class, not only from his charming personality but from his real sympathy and kindness. He was, above all, the student's friend.

A most important feature of Dr. Holmes' professorship was the gradual rise in importance and influence of the Demonstrator. Dr. Holmes was first of all a man of letters. He had neither the time nor the inclination to busy himself with the practical details of running a department ; to say nothing of the unsavory business of obtaining subjects. As time went on he restricted himself more and more to giving his lectures ; the Demonstrator became the Autocrat of the Dissecting Table. Samuel Parkman resigned the Demonstratorship in 1849. The subsequent list under Dr. Holmes is as follows :

F. S. Ainsworth, 1849-1851 ; Samuel Kneeland, 1851-1853 ; R. M. Hodges, 1853-1861 ; David W. Cheever, 1861-1866 ; C. B. Porter (Assistant), 1867-1868 ; C. B. Porter, 1868-1879 ; H. H. A. Beach (Assistant), 1869-1879 ; H. H. A. Beach, 1879-1882 ;

M. H. Richardson, 1882-1887. Dr. Hodges was the first of a continuous series (extending beyond the above list) of brilliant and able Demonstrators who developed into great hospital surgeons; thus the position of Demonstrator came to be regarded as a sure stepping-stone to a hospital appointment. Dr. Hodges was a most skilful and zealous dissector. He made many beautiful dried preparations, especially of the arteries, which have adorned the Museum and are in active service for instruction to-day. In those days the actual duties of the Demonstrator (apart from procuring subjects, and preparing the dissection for the Professor's lecture) consisted of one hour's work daily in the dissecting room, overlooking and helping the students. About 1862, Dr. David W. Cheever started anatomical conferences in the dissecting room, at which, a dissection having been made by picked men, the students were examined in turn by the Demonstrator. These exercises became very popular and later were held in the spring term as well as in the winter one. They were developed and continued under Dr. C. B. Porter and Dr. H. H. A. Beach.

Dr. Cheever became Assistant Professor of Anatomy in 1866, and held the office for two years when he was transferred to the Surgical Department. In addition to recitations he established a very popular course of regional anatomy.

Dr. Thomas Dwight, who had taught histology since 1874, was made instructor in topographical anatomy in 1880 and gave a course of one lecture or recitation a week to the second class.

In 1859 the proper conduct of anatomical teaching received a severe set-back. The Legislature voted a revision of the statutes, and, in spite of the opposition of representatives of the Medical School, the committee in charge of the revision struck out the word "shall" and reinstated "may" in the statute on dissection, thereby making it optional with superintendents to deliver

unclaimed bodies (Chapter twenty-seventh of the General Statutes adopted December twenty-eighth, 1859). During the remaining twenty-three years of Dr. Holmes' professorship the difficulties of obtaining subjects were at times very great. A superintendent naturally found it more convenient to refuse bodies than to do what might place him in an unpleasant position. Clearly it became necessary to awaken his interest in the matter. Clearly also if the disposal of dead bodies was a source of profit to him there was no knowing that he did not sell them to the highest bidder even outside of the State, nor that he did not sell bodies that should have been buried. It is certain that during this disgusting condition of affairs Harvard received bodies from beyond the State limits. It is not impossible that body-snatching was actually practised in Massachusetts. The popular excitement caused by Benjamin F. Butler's Tewksbury investigation had the good effect of making State Boards in charge of certain institutions give their personal attention to the matter.

In the autumn of 1882 Dr. Holmes received an offer from his publishers in consequence of which he resigned his professorship. The Corporation requested him to continue till December. It was his intention to end without ceremony, but a closing lecture was insisted upon. This was given on November twenty-eighth to an overflowing audience composed of Faculty and students. The class presented him with a loving cup; enthusiasm was great; emotion was sincere; his closing scene was a triumph. He was made Emeritus Professor of Anatomy.

It is worth noting that Dr. Holmes' term of service coincided very closely with the occupancy of the building in North Grove street. It began the year after this building was first used and ended in its last scholastic year.

It is still more noteworthy that the two Warrens and Holmes had occupied the Chair of Anatomy for almost precisely one

hundred years; John Warren having been appointed November twenty-second, 1782.

Dr. Thomas Dwight, being requested to continue Dr. Holmes' lectures through the year, resigned his instructorship in histology and gave the lectures to the first class as well as his course of topographical anatomy to the second. Every effort was made by the Faculty to find either at home or abroad "a worthy successor to Dr. Holmes." These efforts failing, it became necessary in June, 1883, to appoint Dr. Thomas Dwight to the professorship. As it happened that he was the great grandson and grandson respectively of the first two Professors, it is allowable to state that there was no suspicion of nepotism in his appointment. Beside the teaching above mentioned he had taught anatomy privately for several years, and for five years had given the course in anatomy at the Medical School of Maine. He had introduced into this country the making and study of frozen sections.

The list of Demonstrators after 1883 is as follows:

M. H. Richardson, 1883-1887; S. J. Mixter (Assistant), 1884-1887; S. J. Mixter, 1887-1893; William M. Conant (Assistant), 1890-1893; Franklin Dexter, 1893-1895; W. A. Brooks, 1895-1901; John Warren, 1901.

There was continuous progress for many years in the management of the dissecting room, the personal instruction being much increased. Many instructors and assistants in anatomy were appointed. We regret that space does not allow us to give them the tribute which their fidelity deserves. The surgical members of the above list of Demonstrators carried on and even increased the prestige which former Demonstrators had given to the office. At last, however, a radical change became necessary. On Dr. Richardson's resignation in 1887 he was made Assistant Professor of Anatomy. When Dr. Mixter resigned as Demonstrator in 1893, Dr. Franklin Dexter became a candidate for the office. He had

the advantage of being a pure anatomist, but one who had a medical degree, and who had worked for years in training himself to teach anatomy. Apart from these qualifications he was desirable from the absolute necessity of breaking with the Surgical Department, if that of Anatomy was to be truly independent. In 1895 Dr. Richardson was transferred from the Anatomical to the Surgical Department, and Dr. Dexter was appointed Assistant Professor of Anatomy in his place. In 1900 he became Associate Professor, but after three years he retired to the general regret. The School owes a great deal to his influence in systematizing laboratory instruction, and in regulating it with military precision. After his promotion he still gave much time to the dissecting room. He was most sympathetic with students, especially with those who found anatomy difficult.

Under Dr. Dwight original work was done for practically the first time in the history of the department. A number of statistical observations were made in the dissecting room and much attention was given to variations, especially to those of the spine and of the hand and foot. Very little had been added to the normal anatomy collection in the Warren Museum since the days when Dr. Hodges was Demonstrator. The collection of numerical variations of the human spine is now one of the best in the world, containing specimens of great rarity. An absolutely new occasional bone (the intercuneiform) had been twice observed in the foot, and the subcapitulum has for the first time been found as a distinct bone in both hands of one body. Many series of frozen sections have been prepared, some of which are in the Museum, but most of which are kept for study. Preparations of formalin-hardened bodies have been made to show the true shapes and relations of the organs, and some of these have been reproduced in papier mâché. A series of enlarged models of the bones has been made in the same material. A fine collection of corrosion preparations has been added to the

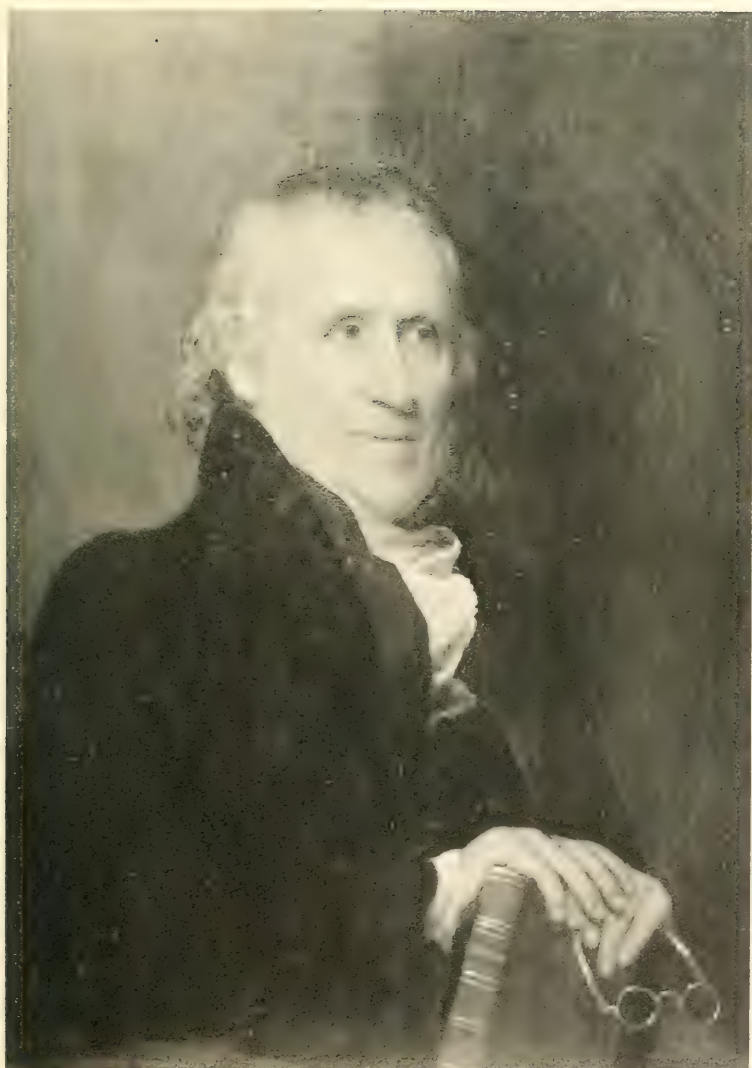
Museum, the most beautiful of which are some in celloidin by Dr. S. J. Mixter.

At the beginning of Dr. Dwight's professorship the obtaining of subjects was in a more satisfactory condition than it had been for a long time, owing to the reforms following the Tewksbury investigation. Nevertheless, a certain number still came from outside the State. This was very properly stopped by the declaration of the Corporation that they would pay nothing for such subjects. In 1898 the great reform brought about by John C. Warren in 1845, and subsequently lost in 1859, was reëstablished; namely—the word “may” was displaced and “shall” again put in, thus making the law once more mandatory. New and important changes were introduced. The privilege of applying for bodies was taken away from individual practitioners, and it was arranged that a fair division should be made among the schools. It was further provided that a body should not be used for fourteen days after death, and should be so kept that it could be seen.

Subsequently the Attorney General ruled that it was unlawful for autopsies to be made on these bodies by the hospital authorities before surrendering them, but in 1902 the law was amended allowing autopsies when the cause of death could not otherwise be determined.

Space will not permit the account of the development of anatomical teaching since 1883. It may be said that for many years it was continuously progressive. In 1888 histology became practically a separate department under Assistant Professor Minot. Perhaps the high-water mark of anatomical instruction was reached in 1897-8. The first class had three lectures weekly from Professor Dwight throughout the first term, and one other from him till January. Professor Dexter gave two a week from the end of November to the close of the year. There was also one recitation to an instructor, Dr. Benjamin Tenney, throughout the year.

Moreover, the dissecting room was carefully supervised and there were exercises by the Demonstrator, Dr. Brooks, for sections of the class during five months. In the second year there were two lectures weekly by Professor Dexter till January, and two by Professor Dwight in the second term. The fourth class had an elective course by Professor Dexter and a voluntary dissecting course by the Demonstrator. In 1899-1900 the first year anatomy was restricted to the first term and the second year anatomy to February and March, in which Dr. Dwight gave five lectures a week. The following year he had three extra hours in the second year for laboratory work. In 1903-4 the second year anatomy was suppressed, so that the entire time now required in anatomy (exclusive of histology and embryology) is half a day during the first year in October, November, and December, and a whole day in January. Beside this there are optional courses in the fourth year. Professor Dwight's protest against the suppression of second year anatomy is in the records of the Faculty meeting of May second, 1903.



THE DEPARTMENT OF THE THEORY AND PRACTICE OF PHYSIC.

1782.

The plan for a medical department of Harvard College submitted by Dr. John Warren and adopted by the College on September nineteenth, 1782, provided for three new professors, one of The Theory and Practice of Physic, one of Anatomy and Surgery, and one of Chemistry.

The rules which were to govern the Professor of Theory and Practice were that he should "teach the students by directing and superintending, as much as may be, their private studies; lecturing of the diseases of the human body, and taking such of them as are qualified to visit their patients; making proper observations on the nature of the diseases and the peculiar circumstances attending them, and their method of cure; and, whenever the professors be desired by any other gentlemen of the Faculty to visit their patients in difficult and uncommon cases, they shall use their endeavors to introduce with them their pupils who are properly qualified." Thus the name of the Department was to be borne out; there should be the theory of medicine developed in the lectures, and the application of these principles worked out as far as possible before the student with the patient at hand.

Dr. John Warren was chosen to the Chair of Anatomy and Surgery, on November twenty-second, 1782, with the proviso that he should act for all the Departments until other men could be secured. A month later, December twenty-fourth, 1782, Dr. Benjamin Waterhouse, formerly of Newport, R.I., was chosen Professor of Theory and Practice, and May twenty-second, 1783, Aaron Dexter, a Boston physician, was chosen Professor of Chemistry. On October seventh, 1783, they were inducted into office

in the Cambridge meeting-house before the highest civil authorities of the Commonwealth, John Hancock, the governor, being present, together with the representatives of the clergy, the college professors, and the general public. Dr. Warren and Dr. Waterhouse were installed together, and each delivered a Latin oration. That of the latter has been published, and called forth the comment from some of the guests that it was not in "New England Latin." Professor Dexter was not present. "The day," writes Dr. Waterhouse, "was brilliant, and the night more so; for the college buildings were illuminated, together with several others."

Dr. Waterhouse, in his address, speaks of all the various branches which are to be brought together and made one by the Professor of Theory and Practice, enumerating anatomy, chemistry, botany, materia medica, and natural philosophy, and, in closing, he makes an appeal for the scientific study of insanity.

The good doctor, evidently, had an exalted idea of the task he was to undertake; and the standard he set was high, so that from that day to the present it has been the duty of the Department of Theory and Practice to sum up the labors of many diverse departments, and to put upon them a practical interpretation; of this we shall see more later.

Dr. Holmes describes Dr. Waterhouse as rather a comical figure about Cambridge. "A brisk, dapper old gentleman, with hair tied in a ribbon behind and, I think, powdered, marching smartly about with his gold-headed cane, with a look of questioning sagacity and an utterance of oracular gravity. The good people of Cambridge listened to his learned talk when they were well, and sent for one of the other two doctors when they were sick." "He probably liked to write and talk about medicine better than to practise it." All this must have been late in life. At the time the Medical Department was started, with festival and illumination, he had but recently returned from his European studies; having graduated

from the University of Leyden in 1780. He had studied also in London, living in the family of Dr. John Fothergill, whom he calls, in his "Treatise on Whooping Cough," "the founder and director of his studies, in name, his proavunculus, in effect his father." Edinburgh had been visited. He states in his diary that he never missed a lecture while in Edinburgh, and that all the time he was in Scotland he was secretary of the Royal Medical Society. He finally took his degree at Leyden, having studied in Europe for more than five years. Without doubt he was the young man of learning then available for the place, just the man to quicken students with a love for science and a desire for general knowledge. Late in life, when writing of his early experiences, he says, "I first taught or tried to teach the John Hunterian Doctrine, for my colleague Warren saw not into Hunter's 'Philosophy of Man, or Animated Nature.'"

Although a certain pomposity of style and cantankerousness of action developed as he became an old man in the nineteenth century, still his work shows that he must have been a thorough man of the times during his early working years. To him is due the introduction of the practice of vaccination into the United States. That he was in close touch with the world's centers is to be inferred from the fact that Jenner's book was read early in 1799, and a little later George Pearson's book upon Cow or Keinepox, after reading which, Dr. Waterhouse published (in the "Columbian Centinal," March twelfth, 1799) a short article on vaccination, entitled, "Something Curious in the Medical Line." In November of the same year he printed a report of experiments which had been made in England by Dr. Woodville. Then, "under serious impression of effecting a public benefit, and conceiving it moreover a duty in my official situation in this University," he obtained some vaccine from England, preserved, on threads, and on July eighth, 1800, vaccinated first of all his son, Daniel O. Waterhouse,

and noted with satisfaction that "the appearance and symptoms were alike in the new and the old world." In response to a memorial presented by Dr. Waterhouse, the Boston Board of Health in 1802 made its celebrated experiments to determine the value of cow-pox as a preventative against small-pox. Dr. Waterhouse wrote several books and pamphlets upon vaccination and small-pox. After three unsuccessful attempts he succeeded in getting some infected threads to Monticello, where President Jefferson vaccinated all his immediate family and servants, and probably himself; and from here the material was carried to Washington. Later, Dr. Waterhouse received a silver snuff-box from Jenner, containing vaccine and a set of lancets also, in a silver case. The box is inscribed, "Edw. Jenner to B. Waterhouse." This is reality, and not the mythical gold snuff-box told about by Lowell, and said to have been inscribed, "From the Jenner of the Old World to the Jenner of the New." Not only did Dr. Waterhouse successfully fight with tongue and pen for vaccination, enough of achievement for one man's life, but the Botanical Garden at Cambridge was founded by him, as well as the Collection of Minerals which, in part a gift from his friend, Dr. Lettson of England, had its beginning in his broad enthusiasm for science.

In 1804 Dr. Waterhouse delivered at the close of the medical course, before the students of the University in Holden Chapel, a lecture on "Cautions to Young Persons concerning Health, containing the general doctrine of Chronic Disease, showing the evil tendency of the using of tobacco upon young persons, more especially the ruinous effects of smoking cigars, with observations on the use of ardent and vinous spirits in general." Dr. Waterhouse pictures in this lecture the rapid deterioration of the Harvard student of the day. "Six times as much ardent spirits were expended here (in Cambridge) annually as in the days of our fathers. Unruly wine and ardent spirits have supplanted sober

cider." The general health of the College has deteriorated. For twenty-seven years, from 1769 to 1796, there had been but nine deaths among the students. In the following eight years there had been sixteen deaths, mostly from consumption. Indeed, never in his twenty-three years of experience had Dr. Waterhouse seen "so many hectic habits and consumptive affections as of late years." All of which he ascribed to the evil effects of smoking and drinking. It is a vigorous argument, not sparing the clergy, and calculated to do great good. Six editions were printed during the next fifteen or twenty years, and the lecture was translated into several foreign languages. The fame of this lecture always displeased Dr. Waterhouse.

Rather than the pompous old gentleman of Dr. Holmes' remembrance, let us think of Dr. Waterhouse as the enthusiastic student of science, striving in far-distant America to keep in touch with the best that was taking place in the centers of European learning, vigorous and practical in his ability to seize upon the medical event of the period, strong in the denunciation of existing evils, and with a breadth of mind that prepared the way for the advent of Gray and Agassiz.

As early as 1784 an attempt was made to secure clinical material for teaching. Application was made to the town of Boston for the use of the infirmary at the almshouse for the Professors of Surgery and of Theory and Practice.

Dr. Waterhouse also made a plea for a marine hospital where he should have control of clinical material for teaching, setting forth in arguments, which are just as sound to-day, the need of the School to have control of hospital wards. This, too, came to naught. Finally the Boston almshouse was utilized for teaching purposes.

With the return from foreign medical study of Drs. James Jackson and John C. Warren a new era dawned. New ideas were introduced and were in many ways opposed by the Professor of

Theory and Practice. It was needful that the School should remove to Boston, as the students for the most part resided there, working with their preceptors. This was accomplished finally in 1810, though against the desires of Dr. Waterhouse, who finally capitulated and joined the petitioners. The young men practically made a concerted effort to attack the unpopular professor and cause his removal. They found him, however, a hard fighter, and it was only after a very prolonged and acrimonious debate that the old Jeffersonian Republican fell before the attacks of young men representing new ideas in medicine and the Federalist party in politics.

In 1812 James Jackson was promoted to the professorship of the Theory and Practice of Physic.

Dr. Jackson cannot be considered and judged solely as the Professor of Medicine. He was too large and important a figure in both the medical and social community of Massachusetts for that. As Professor of Theory and Practice he had the position from which he was able naturally to exert powerful influence on the people and times. It was, however, his all-round judicial grasp of the needs of medicine and medical education in Massachusetts that made him the great man that he was. He was not what could be termed an original teacher, investigator or writer. Dr. Jackson was a good, safe teacher. He came back from Europe hoping to be the introducer of vaccination into the Boston community, but he found himself forestalled by Dr. Waterhouse. And later when he made the first suggestion to the Boston authorities that they should make a practical test of the protective powers of vaccination the suggestion was not accepted, and it was not until Dr. Waterhouse took the lead at a later time, writing an elaborate argument in favor of the undertaking, that the famous experiment was authorized.

Both Dr. Jackson and Dr. J. C. Warren returned to Boston from their European studies imbued with the spirit of the scientific

centers. They saw the need of clinical teaching, the need of a sure basis for practice, the need of a diffusion of knowledge by means of societies and journals. They clearly realized that in order that there should be anything like a profession of medicine the members must join together, stand shoulder to shoulder and not be afraid to tell of their failures as well as their successes. These two men through their long professional lives worked together supplementing each other's efforts — so that it is often hard to say which was the originator of the multifarious schemes put forth for the good of the community. To them it was largely due that the Medical School was moved from Cambridge to Boston, where most of the pupils lived and where there was material for clinical teaching. The Massachusetts Medical Society was held together largely through them, the formation of a rival society was prevented, and with it a rival Medical School. A journal was started, to which they were the most active contributors. The Massachusetts General Hospital was founded largely at their instigation. Dr. Jackson, in his plea to the benevolent citizens of Boston for such an institution, makes the statement: "A hospital is an institution absolutely essential to a medical school, and one which would afford relief and comfort to thousands of sick and miserable." He realized the fact that a hospital used for teaching purposes afforded the best treatment for patients. In addition to the hospital the new building for the Medical School on Mason street was erected mainly through Dr. Jackson's efforts.

Of his teaching we have a good idea given us in a letter of his son, the talented James Jackson, Jr., to Dr. J. B. S. Jackson, then in Europe, telling of the Medical School and the professors. When he writes of his father it is as follows: "You will not deem it an affectation in me, I am sure, to say that I listen to him with infinite delight and satisfaction. The object of attending lectures is to be taught — and my word for it, he does understand the art of

teaching better than any man with whom it has been my good fortune to meet."

Dr. Jackson was a careful observer, was methodical in his study of the symptoms of the patient, and was at the same time friendly and sympathetic with both his students and with the patient.

In 1822 he wrote to the Hon. John Lowell that in addition to his stated lectures it was his practice always to give one afternoon each week, and usually two, to the consideration of subjects that would otherwise have been crowded out—because the time allotted to the lectures was not sufficiently long to cover all the ground which he felt should be gone over in his branch of medicine. This illustrates his enthusiasm for his teaching, even in the midst of a busy practice. Of Dr. Jackson's conduct at the bedside, Dr. Holmes is moved to say, "I have seen many noted British, French, and American practitioners, but I never saw a man so altogether admirable at the bedside of the sick as Dr. James Jackson."

Thus we have in Professor Jackson a well rounded physician and man of affairs. The country was too new and the task of organization was too great to expect new discoveries, new lines of thought. But James Jackson had the ability to teach the knowledge that he had acquired and to inspire others with a zeal for scientific truth. He was shrewd in the observation of his cases, as was evidenced by his recognition of a serious disorder located in the right iliac region—later called, by a successor of Dr. Jackson's, "appendicitis." His broad philanthropy and humanity went far towards making the traditions of the medical life of Boston the most delightful that are to be found in the United States.

Dr. Jackson's term of office continued until 1836 when he resigned his professorship—and in the following year his position at the Massachusetts General Hospital. Some years previously, in 1832—a year after the practical separation of the Medical School from the University—he had asked for an assistant in his work

and Dr. John Ware had been elected adjunct professor with the provision that it should entail no additional expense to the students of the Medical School.

Dr. John Ware, who succeeded Dr. Jackson, was a modest, hard-working physician. He was possessed with a very pleasing personality, and was popular as being a thoroughly good fellow, who could both sing a good song and tell a good story after dinner. As a physician he was possessed of sound judgment and clear insight into his cases. He believed that the professorship which he was called to fill was the place where, above all things, the students were to look for conservative opinions. In addition to his professional work he was much interested in natural history.

We possess several addresses delivered by him before the students of the Medical School — the first in 1833 immediately after his selection as adjunct professor, the next in 1843, again in 1850, and finally a farewell address to the class graduating in 1856. From these we can gather the ideals which actuated him in his teaching. John Ware was thoroughly imbued with the importance of the medical profession and of its dignity, and at the same time of the practical impossibility of its pursuit being attended with great renown. Harvey and Newton he compared as men of the same type of mind and both as producing great discoveries; "but who knows of Harvey as compared with the popular fame of Newton?" "A physician's permanent reputation must be given to him by the profession." He urges to general study, and says that a little learning is not a dangerous thing, provided the elemental portions are correctly acquired. The danger of practitioners becoming simply students of the natural history of disease already impressed him; and in this, as in the several other addresses, he warns against specialism bought at the risk of losing the well-developed man. In the address of 1843 the opening theme is "Zeal for Study and its necessity, in order to acquire a true knowledge and

appreciation of the medical profession." "The student comes to the Medical School for the first time to study and acquire for himself." "Previous defects of education can be overcome by the man who now cultivates his powers of observation." "The studies of the humanities and of language," he says, "are not to be despised, rather much to be desired." "Before, we have been taught by others, now we are to learn for ourselves." Again he returns to the charge against scientific studies for their own sake, and warns his students not to get too much interested in them and neglect the weighty matters of the physician's calling. He compares France, where the interest of the medical fraternity has been scientific and changing and unimportant, with the solid achievements of England. "We can enumerate," he continues, "half a dozen English writers whose works contain more lessons of practical wisdom than the whole catalogue of the French. Where is their Sydenham? or their Hunter? or, to come down to our contemporaries, I know not a single work whose sound common sense, and practical lessons that can alone fit a physician for his ordinary duties, is to be compared for a moment to those of Heberden, Prout, Abercrombie, and Holland." In spite of all this praise, he has no unstinted commendation of English practice.

In the school circular of 1841-42 fifty plaster casts imported from Paris, for the use of the Department of Theory and Practice, were first mentioned. These were colored, and represented "many elementary forms of disease." They continued to be mentioned in the catalogues as "recently imported" during the next fifteen years.

Dr. Morrill Wyman wrote out a complete description of these casts and of his interpretation of them, which is still preserved in the Warren Museum. In spite of the prominence given to their value in the catalogue, they were rarely used by the professors to illustrate their lectures, as it was very difficult to move them from their position in the Museum to the lecture-room.

In Theory and Practice the course in 1850 embraced lectures on the general principles of pathology and therapeutics, and the history and treatment of particular diseases and clinical lectures at the Massachusetts General Hospital. In 1852-53 Dr. J. B. S. Jackson, besides being professor in his own Department of Morbid Anatomy, was associated with Dr. Ware in Theory and Practice. The following year, 1853-54, Dr. Morrill Wyman became Adjunct Professor of Theory and Practice, which office he continued to hold till 1857. In that year a change was attempted in the course of study, and the first attempt to present anything like a graded course was made. A two years' course was presented, in which anatomy, pathological anatomy, surgery, chemistry, practical anatomy, and physiology were to be pursued during the first year, while the second was to be devoted to botany, zoology, theory and practice, midwifery, the diseases of women and children, medical jurisprudence, materia medica, practical anatomy, and clinical observation. Arrangements were also made so that the full course could be crowded into a single year. Chemical analysis and the use of the microscope are spoken of for the first time. The statement is made also that the subjects formerly in charge of the Hersey Professor are now divided amongst three professors, and the lectures and examinations are held at the Medical College by Dr. John Ware and Dr. George C. Shattuck. Dr. Wyman's name no longer appears in the catalogue. The books used in the Department that year were Watson's Theory and Practice as the text-book, and, as collateral reading, Wood, Stokes and Bell, Graves and Williams.

Dr. John Ware resigned and, in the circular of March of 1859, Dr. George C. Shattuck is spoken of as the Adjunct Professor, and in the fall announcement of the same year as Hersey Professor, and Dr. Henry I. Bowditch appears as Professor of Clinical Medicine.

Dr. George C. Shattuck held the position of Hersey Professor of Theory and Practice of Physic until November, 1873. It was the time of instruction by the didactic lecture and Dr. Shattuck's teaching was not different from that of other professors of the time. Nevertheless he had decidedly advanced ideas as to what the student needed to help him become a practical physician. And to this end he encouraged the young men outside the School in their clinical teaching. As Dean of the Faculty from 1864 to 1869 he encouraged the development of the School and the introduction of new men into the ranks of the instructors. That he acted as a leader of the progressive party in those days is something that the friends of the School should hold in kind remembrance. Of the new men, Dr. Charles E. Buckingham joined Dr. Shattuck's Department (Catalogue of 1866-1867), first as an instructor and later as Adjunct Hersey Professor. In 1869-70 Dr. Francis Minot first joined the Department.

All those who knew Dr. Shattuck speak of his genial manners, his kind face, and invariable gentleness and courtesy. His medical work was confined to his hospital service and his teaching, as he gave up all active practice at an early date. He was always ready to give help and advice to all those who were struggling to obtain a medical education. Just at the end of Dr. Shattuck's term of service great changes in the method of teaching were introduced, coincident with the advent of President Eliot. The three years' course of progressive and systematic study with examinations at the end of each year appeared in the second edition of the catalogue devoted to the Medical School in 1871-72. In the catalogue of the School in which Dr. Shattuck's name appears for the last time appears the first examination paper in Theory and Practice. Dr. Francis Minot succeeded to the Hersey Professorship. He had been, in the year 1869-70, an instructor in the same Department, and in 1872-73 Adjunct Professor and the first lecturer in the

School on the diseases of women and children. The subject of diseases of women was an unpopular one with the conservative members of the profession, as indeed, were the other specialties. But the work of several men outside of the School forced the Faculty to recognize the need of instruction in this particular branch.

Dr. Minot's instruction consisted of lectures illustrated largely from his own personal experience. Ward instruction was also given to large groups of students, and the cases were carefully explained to the class.

When the Medical School on Boylston street (1883) was opened, Dr. F. C. Shattuck held recitations in Flint's Theory and Practice of Medicine—questioning the students on the pages covered since the last lesson. It was good training and made at least one book read thoroughly and its doubtful statements explained. About this time places as assistants at the hospital were not eagerly sought after and cutting lectures and clinics for the sake of seeing patients in the out-patient departments was considered a very doubtful proceeding by the students. The patients were not studied so completely, as is instanced by the patient who came back asking for the doctor who looked at him as though he would look through him, and then gave him some medicine that made him all right.

In 1888 Dr. Shattuck became Professor of Clinical Medicine and was succeeded by Dr. Elbridge G. Cutler.

In 1890 Dr. Minot resigned and in 1892 Dr. Reginald H. Fitz was transferred to the professorship of Theory and Practice. Dr. Fitz at once gave up the old "hospital visit" as a means of teaching and substituted in its place a clinical exercise in which the student was put in front of the patient and made to obtain the history, make the examination, call for or make examinations of blood or urine or sputum or any other aids that would enable him to get information regarding the condition of the patient.

All of this had to be done under the watchful eye of the professor, who insisted on accurate and logical statements as to the facts obtained from the history or examination of the patient. At the end of the exercise Professor Fitz is accustomed to sum up the principal points of the case, treating the subject from the broadest bearings of medicine. It is an exercise calculated to train the student to use what he has learned in the laboratories and from his books and other instructors, and to utilize it under fire.

The text-book recitations were continued until 1900, when a scheme of sectional teaching was substituted. Four new assistants were appointed, Dr. Mark W. Richardson, Dr. Elliott P. Joslin, Dr. Franklin W. White, and Dr. George S. C. Badger. Dr. Richardson resigned in the middle of the year and Dr. Arthur K. Stone was appointed to succeed him and in 1903 Dr. Joseph H. Pratt was added to the number.

The students are taken in their second year fresh from the laboratory courses, and as yet unacquainted with actual cases, and taught the value of symptoms and how to take histories. The importance of special common symptoms is emphasized; diseases are spoken of in the order of their relative frequency and importance. General symptoms are taken up and considered, such as cough, jaundice, dropsy, constipation, and diarrhea. Then the value of the methods of precision is considered and the aids to accurate knowledge of the case that can be afforded by laboratory methods. The limitations as well as the extent of the knowledge to be obtained from the laboratory methods are discussed. Later still in the year the students are given cases to study and they are encouraged to apply all of the laboratory methods at their command that they may know as much as possible about the case. This teaching is continued during the first half of the third year with more complicated cases and with still greater criticism of the work done by the individual student.

In 1905 Dr. Joslin was promoted to be Instructor and Dr. Henry A. Christian was added to the teaching corps as Instructor. He has charge of the ward teaching, overseeing men of the fourth year who have cases assigned to them in the wards of the Massachusetts General Hospital. He directs their observations of the patients themselves and also their laboratory work, criticising their methods and their accuracy. The cases are further discussed with Professor Fitz on his daily visits to the wards of the hospital.

By this means the student is brought into still closer relations with the cases, and is enabled not only to make diagnoses, but to see patients under treatment and to observe changes in their general physical condition from day to day ; still further, to observe changes in their blood, urine, feces, stomach contents, and anything else which it may be desirable to study in connection with the case.

In addition to this work of the sections Dr. Cutler gives ward clinics and demonstrations throughout the third year and a clinical lecture during the first half of the year.

To aid in the sectional work the Department has prepared a little book of Outlines of Medical Diagnosis. This book contains mention of points in history taking, methods of systematic examination of the body and the useful procedures in the examination of the urine, blood, sputum, gastric contents, and other secretions. The book makes practical all the work of the first years of study at the School, and unifies and simplifies the teaching. The other clinical Departments of the School have adopted this book as the basis of their teaching, and thus it has tended to bring the teaching throughout the School to a more uniform standard.

It must always be borne in mind that the laboratories are for training in methods and theories ; the clinic is for the employment of those methods which are of special value for the diagnosis, prognosis, and treatment of disease in connection with the results of the other methods of examining the patient.

As Dr. Waterhouse, in his inaugural address in 1783, called attention to the various sciences which were adjuncts of this professorship, so now judicious instruction is needed which shall select from the work of the laboratories those procedures which may be expected to yield real returns to the student and practitioner, and shall insist that the student shall know both how and when to employ laboratory assistance.

No student has the mental training or ability to pass critical judgment upon the laboratory work of many different Departments. Hence the need of critical lectures and critical instruction which shall point the way and help train those critical faculties which, together with accurate observation, need to be developed to make the student the intelligent practitioner; further, by the repetition of valuable laboratory aids and other methods of examination, to have the student learn to apply the practical part of his previous instruction and to rely upon his own observations, making him, as far as possible and as is desirable, independent of special expert assistance; finally, the proper interpretation of the result of the various methods of examination, whether of subjective symptoms or physical signs, or chemical or microscopical investigation for the best treatment of the individual case under consideration. All this at the present time is the aim of the Department of Theory and Practice.



THE DEPARTMENT OF CHEMISTRY.

1783.

The Medical School of Harvard University was founded in 1782. Dr. John Warren was elected Professor of Anatomy and Surgery and Dr. Waterhouse was chosen Professor of the Theory and Practice of Physic, and either or both of them were desired, as may be most convenient to them, to deliver lectures in chemistry and materia medica till some gentleman is chosen for Professor in that Department. On May twenty-second of the following year Dr. Dexter was made Professor of Chemistry. The Medical School at that time occupied the basement of Harvard Hall, but soon after was removed to Holden Chapel, Cambridge. In 1784 the Corporation voted eighty pounds for the purchase of medical books and clinical apparatus.

Aaron Dexter was born in Chelsea in 1750. He graduated from Harvard in 1776 and studied medicine under Dr. Samuel Danforth, called "the most scientific chemist then on the stage." He served as ship-surgeon during the Revolution and was captured by the British and taken to Halifax. He was highly respected as a physician and citizen. He was a member of the Massachusetts Historical Society and American Academy of Arts and Sciences, was a member of the first staff of the Massachusetts General Hospital, and one of the founders of the Massachusetts Humane Society. In 1791 Major William Ewing (H. C., 1753) left by will one thousand pounds to the Corporation "for the sole use and purpose of enlarging the salary of the Professor of Chemistry." Dexter held the professorship until 1816, when he was made Professor emeritus on his resignation of his active duties. He died in 1829. In 1809 John Gorham had been appointed adjunct professor and on Dexter's resignation in 1816 was chosen Professor of Chemistry.

Gorham was born in Boston in 1783. He received the degree of A.M. at Harvard in 1801, studied medicine with his future father-in-law, John Warren, and was graduated Bachelor in Medicine from Harvard in 1804. He then spent two years of study in Europe. He was a popular and successful teacher. His friend, Dr. James Jackson, said of him, "During twenty years and more I know not that he has made an enemy." He was the author of two works on chemistry. In 1810 the Medical Department was removed to Boston, 49 Marlborough street (now 400 Washington street). There it remained until 1816, when it moved to its own building in Mason street. It was announced in 1810 that "Dr. Gorham will give a private course to the gentlemen of Boston after the conclusion of the medical lectures." He was also obliged to give a course to the seniors at Cambridge.

In 1812 the Corporation authorized the expenditure of \$170.00 to fit up a laboratory suitable for the needs of the Professor in Chemistry. In 1815 the lectureship in materia medica and botany was established and given to Dr. Jacob Bigelow, Dr. Gorham being still required to give a full course in chemistry and mineralogy to the students at Cambridge, and to have charge of the laboratories and apparatus there. In 1824, the Corporation having voted that the Erving Professor should reside in Cambridge, and Dr. Gorham having declined to accept this condition, a Professor of Mineralogy and Geology was appointed who was to give the instruction in chemistry there, whilst Dr. Gorham's duties were to be confined to the Medical School. In 1827 Dr. Gorham resigned, and the Corporation voted that the Erving Professor of Chemistry should again reside in Cambridge and give lectures both to the undergraduates there and at the Medical School in Boston. Dr. Gorham died in 1829. His successor was John White Webster, appointed in 1827.

Dr. Webster was born in Boston in 1793, graduated at Cambridge

in the class of 1811 and from the Medical School in 1815. He practised medicine both in Cambridge and Boston. He was a member of the American Academy and an associate of several foreign scientific societies. His lectures in the Medical School were given at the Mason street building until 1847, when the School removed to its newly situated "Massachusetts Medical College," as it was called, in North Grove street, and where the terrible tragedy occurred which led to his resignation in 1850.

Professor E. N. Horsford was appointed lecturer in chemistry at the Medical School for the course in 1849-50, as the records read, "in the absence of the Erving Professor."

In 1850 Josiah Parsons Cooke (A.B. Harvard, 1848) was elected Erving Professor of Chemistry and Mineralogy, and it was stipulated that "he shall reside in Cambridge, be a member of the College Faculty, and give the lectures in the Medical College in Boston." A laboratory for students, six desks, was fitted up by him in the basement of the building, and there for the first time, about 1853, students studied analytical chemistry under the oversight of an instructor. A very small number of students followed the course, using Galloway's small "Analysis" as their guide. The writer of this sketch procured from abroad Lehmann's *Physiologische Chemie*, as no works in English were available, and was the first medical student to carry the study of chemistry beyond simple inorganic analysis. Professor Cooke gave, in his regular course, a few lectures on the urine and on toxicology. In 1856 he was relieved, at his request, from lecturing longer at the Medical School, and Dr. John Bacon and Mr. Charles W. Eliot were appointed lecturers in chemistry in the Medical School for that year. Professor Cooke did much to broaden the character of chemical instruction in the School, and deserves great credit for the introduction of laboratory teaching into the curriculum. He remained Erving Professor at Cambridge until 1894. He received the degree

of LL.D. from the College and the University of Cambridge, was a member of the National Academy of Sciences, and President of the American Academy of Arts and Sciences. He died in 1894.

In 1857 Dr. John Bacon (Harvard A.B., 1837; M.D., 1840) was elected University Professor in Chemistry for the Medical School, thus severing pre-existing connections between the teaching of chemistry in the undergraduate and medical Departments. In 1858 a request having been made that the income of the Erving fund, originally bestowed for the benefit of Dr. Dexter, be transferred to the Medical School, the Corporation decided it best that existing arrangements should not be disturbed. Dr. Bacon, who had previously given instruction in chemistry at the Boylston Medical School, restored and enlarged the students' laboratory in the basement of the Medical College, erecting sixteen desks. In 1858 the "Summer School" was established, and recitations in chemistry were held throughout the year. Voluntary laboratory instruction was given during April, May, and June. In the winter course there were two lectures a week.

In 1866 Dr. James C. White (Harvard A.B., 1853; M.D., 1856) was appointed Adjunct Professor of Chemistry.

In May, 1871, Dr. Bacon resigned, which by University law terminated the adjunct professorship held by Dr. White. During these five years of joint administration of the Department much more attention was given to physiological, toxicological, and clinical chemistry than previously. Demonstrations in the latter branch were also conducted at the Massachusetts General Hospital for the benefit of the students.

Following the resignation of Dr. Bacon, who died in 1881, Dr. Edward S. Wood (Harvard A.B., 1867; M.D., 1871) was appointed Assistant Professor of Chemistry, and Dr. J. C. White was made instructor to carry on the course during Dr. Wood's year of study in Europe. During the year 1871 the chemical laboratory was

enlarged so as to accommodate nearly one hundred students, and Dr. Bacon presented all the clinical apparatus, cases, and other furniture in the laboratory to the Corporation for the use of the Medical School.

In 1873 it was voted that a satisfactory examination in general chemistry and qualitative analysis should be accepted as an equivalent for an examination in those branches in the Medical School. This was the first step towards the elimination of general chemistry from the curriculum.

In 1876 Dr. Wood was appointed full professor.

In 1883 the School removed to its new building in Boylston street, where two large laboratories for the Chemical Department had been constructed. In 1884 Dr. William B. Hills (A.B. Harvard, 1871; M.D., 1874) was chosen Assistant Professor of Chemistry, and in 1889 advanced to the position of associate professor. In 1890 the Faculty voted that students who have passed a satisfactory examination in general chemistry in the undergraduate department may pursue the study of medical chemistry during their first year. From this date the character of the instruction became almost wholly medical and in its broadest sense; in 1898 a course on pharmaceutical and physiological chemistry under Dr. Franz Pfaff was established. In 1903 it was voted that a course in elementary organic chemistry should be added to the requisites for admission after September, 1903. Professor Hills resigned in 1904. Professor Wood died in the summer of 1905.

During the year 1905-1906 the Department has been carried on by Dr. L. Alsberg and Dr. L. J. Henderson under the title, *Instructors in Biological Chemistry*.

The writer of this sketch desires to express his obligation to the History of the Medical School by Drs. Harrington and Mumford for most of the information above presented.



THE DEPARTMENT OF OBSTETRICS.

1815.

A diligent search through old Harvard catalogues has revealed but little about the methods of instruction in the early days of the Obstetrical Department.

Previous to 1815 there was no official instruction in obstetrics. At that date Dr. Walter Channing was appointed lecturer in obstetrics, becoming professor in 1818; and he held the chair until 1854, his full title being Professor of Obstetrics and Medical Jurisprudence. Neither subject apparently was regarded as of sufficient importance to merit a separate professorship, and they continued thus combined until 1877.

The first definite statement about the course that has been found is in the Catalogue of 1830, which states :

The Midwifery Department contains models from Florence to illustrate the practice and to teach the anatomy of this branch of the profession. Besides these, it is well supplied with plates and preparations to aid its study.

In 1841, in the "Circular" of Harvard University, it is stated that there are fifty lectures on midwifery, and others on operative midwifery.

The class is formed into divisions, and these meet the professor in the afternoon and as often as may be necessary, and are examined on what has been taught, and with the professor perform the operations with instruments on a suitable machine. The lectures are illustrated by models made in Florence and by every truly valuable work with plates as it appears.

There was in those early days no practical instruction other than by accident or favor. It was the custom for many of the professors to have a few medical pupils often actually living in their houses, and theoretically absorbing learning. Presumably, such students had chances to take charge of the labor of poor patients, or at least

to be present at them, though most of such labors were probably conducted by old women, wise in such affairs. A certain amount of practical instruction must thus have been given before students were allowed to take important cases themselves. But this close association with older doctors died out very largely in the thirties. For many years afterward the names of various men appear after those of students as their "instructors." Yet the relation was a much less intimate one than would seem to be implied. From 1835 to about 1860 it must have been a very rare thing for a man to see a case of labor, until, as a full-fledged practitioner, he was brought face to face with the awful problem of how that twelve-pound baby — babies were always twelve-pounders before we carried scales — was going to get through that tiny opening and learned to his great surprise that generally his utmost effort could not prevent the happy result.

Dr. Channing's lectures were interesting and amusing and, naturally, in the then state of obstetrical knowledge, not especially scientific. No mention of a text-book can be found, and the "models made in Florence" must have appeared but rarely, as the few of his pupils that have been reached do not remember ever seeing any of them.

About the middle of the century there began to be an uneasy sense that in obstetrics, as in other subjects, it was possible that didactic lectures only were not the ideal method of instruction and that they should be supplemented by clinical teaching.

In 1855 Dr. D. H. Storer took the chair. He had previously been teaching obstetrics at the "Tremont Street Medical School," the headquarters of which were a room at 39 Tremont street. This was an institution started in 1838 by Bigelow, Edward Reynolds, Storer, and Holmes, "for the purpose," in the words of its catalogue, "of giving a full course of instruction to private pupils, principally during that part of the year not occupied by the public

lectures of the University." The lectures were soon, if not from the first, given only during the vacations of the University ; and it thus became a summer school to augment the instruction given at Harvard, becoming more and more closely connected with the School, until finally, in 1858, it became the Harvard Summer School. When started it was doubtless somewhat of a protest against the cut-and-dried methods in vogue at the University on the part of ambitious young men, full of zeal and eagerness to teach, some of whom at least felt strongly the importance of clinical instruction and experience, very little of which could then be obtained in any Department of Harvard. In the earliest catalogue of the Tremont School at hand, that of 1847, it is stated that "the manikin is used ; and, during the last year of study, arrangements are made for the student becoming practically acquainted with the management of labor." This was many years before Harvard held out any such promise.

When Storer took the chair, fresh from his experience at the Tremont School and full of the great truth that instruction should be practical, he soon attempted to supply at least some students with cases, the arrangement being that two dollars were paid to physicians for every case that they turned over to the School. Of course, the Boston Dispensary was the great source of supply. According to the catalogue of 1855 :

Lectures in the Department of Midwifery comprise the anatomy of the pelvis and organs of generation, the functions and diseases of the external and internal organs, the physiology of generation, the symptoms and diseases of pregnancy. The different classes of labor are minutely dwelt upon, and the use of instruments employed demonstrated upon the manikin. Particular attention is paid to diseases of the puerperal state. The lectures will be illustrated by specimens and plates. A distinct course is given on medical jurisprudence, those subjects receiving special attention which have a bearing on obstetrics ; namely, impotence, superfœtation, retarded gestation, abortion, pretended pregnancy, rape, infanticide, etc.

In 1858 the Harvard Catalogue, using the words of the Tremont Street School, announces that there are "arrangements made by which the student is enabled to become acquainted practically with the management of labor." But cases were still few and far between; and fortunate, indeed, was the man that got one. In that year "separate instruction was given in operative obstetrics;" but, like the cases, the "separate instruction" was scanty, for the professor, with the specter of puerperal fever ever present before his eyes, advised leaving the case to nature under almost all conditions. The books then in use were those of Churchill, Ramsbotham, and Cazeaux; and the professor, in his teaching that nature should not be interfered with, was but carrying out the remark of Ramsbotham, that all that was needed at an ordinary case of labor was a lancet and a catheter. There was then no assistant; but in 1865 Dr. H. R. Storer heard the recitations until Dr. S. L. Abbot took his place in 1867, in which year Dr. C. E. Buckingham was appointed adjunct professor to assist Dr. D. H. Storer. In 1869 Storer resigned, and Dr. Buckingham was advanced to the full professorship, while Dr. J. P. Reynolds took the place of Dr. Abbott. Methods of instruction continued about the same. Dr. Reynolds writes that he "gave private teaching, pursuing an individual course with the approval of the professor, and superintending the assignment of cases as obtained from the Dispensary, and encouraging students to call upon him for counsel and assistance."

In 1871 Dr. W. L. Richardson became instructor. While the catalogue announces that "students will be allowed to take charge of cases in their third year," such cases were still not by any means plentiful, and for several years thereafter enterprising students bought in the public market, so to say, paying the regular fee of two dollars, many cases in addition to the few supplied to the School.

In 1872 Dr. Richardson dropped out for two years. In this year, for the first time, it was announced that instruction in obstetrics was provided for graduates. Schroeder's book was added to those in use.

In 1874 Dr. Richardson returned, this time as clinical instructor—an appointment that marks a distinct advance, as does also the establishment of a course in operative midwifery, with practical illustrations upon the cadaver. Leischman, Schroeder, and Cadeaux became the text-books.

The birth of modern obstetrics may be regarded as dating from the early seventies, for at that time foreglimmerings of the meaning of antiseptics began to filter into the medical mind, though the importance of the theories of Semmelweis, published in 1847, had till then not been appreciated. The germ theory as applied to obstetrics was of course not yet wholly accepted, but its influence began to be felt.

In 1877, upon the death of Dr. Buckingham, Dr. Reynolds was appointed professor. Playfair became the text-book, with the books of Winckel, Parker, and Barnes added to those previously in use. In 1880 the voluntary fourth year was established, and for students of that year were provided one lecture weekly by the professor, and two clinical and operative exercises weekly for four months by the instructor. In this year was established Dr. Charles M. Green's "summer course" in obstetrics; and, although Dr. Green was not connected with the School officially until 1883, this may be justly regarded as having been part of the Harvard teaching from its beginning. This course has always been invaluable for the lucky few who could take it, affording them, besides the benefit of Dr. Green's lectures, far greater opportunities for clinical work than could possibly be supplied by the School, and also invaluable in that it has been the means of keeping together during the summer the patients upon which the School is dependent for its

supply of cases for students during the winter. Beginning with ten cases distributed among five students, the material at Dr. Green's disposal has increased so that an energetic man can now easily conduct fifty cases while taking the course. This summer course has been practically the Out-patient Department of the Boston Lying-in Hospital, under the auspices of which there were delivered by students, in 1900, about eighteen hundred women.

In 1882 Dr. Richardson was appointed assistant professor. Lusk became the text-book, and continued in use for many years.

In 1883, for the first time, every third-year man was required to attend and conduct two cases of labor before obtaining a degree, and Dr. Green was appointed clinical assistant to help give the necessary instruction.

In 1886 Dr. J. P. Reynolds resigned, and Dr. Richardson became professor in his place. Three cases were now required, and the staff of assistants was increased by the addition of Dr. Edward Reynolds.

In 1887 still another assistant, Dr. C. W. Townsend, became necessary. The books of Schauta and Kucher are added to the collateral reading.

In 1888 four cases were required and two years later the number was raised to six and the Clinical Conference in Obstetrics was established. Three courses were now offered to graduates. In 1892 a valuable addition was made to the instruction, in that full written reports of the six required cases was insisted upon.

In 1894 an additional assistant, Dr. George Haven, became necessary, Dr. Green becoming assistant professor. The excellent rule was made that each student must receive instruction in at least one case. Previously, if a student's cases all happened to be normal ones the chances were that he got no bedside instruction whatever.

In 1895 Dr. Edward Reynolds was made instructor, and, Dr.

Haven having resigned, Drs. F. A. Higgins and F. S. Newell became assistants.

In 1899 an elective course was started in operative obstetrics under Professor Green, consisting of twelve practical exercises, with a repetition of the same under the assistants, each student receiving three two-hour exercises.

In 1901 Dr. Higgins took the place of Dr. Reynolds as instructor, while Drs. H. T. Swain and L. V. Friedman were appointed assistants.

In 1904 Dr. Green became associate professor, Dr. Newell took the place of Dr. Higgins as instructor, while Dr. J. R. Torbert was appointed assistant. The present teaching force consists of one professor, Dr. W. L. Richardson; one associate professor, Dr. Charles M. Green; one instructor, Dr. Newell; three assistants, Drs. Swain, Friedman, and Torbert.

The teaching scheme is as follows: In the third year there is required attendance at sixty-four lectures upon the theory and practice of obstetrics, and thirty-two recitations upon the same, though practically, by allowing the instructor to base his recitations chiefly upon the text-books it becomes possible for the professor to devote most of his time to special subjects. In clinical obstetrics each student receives four hours of instruction at the Boston Lying-in Hospital from the teaching members of the staff. Each student serves ten days as externe of the hospital, conducting from six to twelve cases of labor and caring for them during convalescence, written reports of each of which he is required to present. He must receive personal instruction in one case and may call for it in the other five required for a degree. This he receives from the instructor and his assistants and of course unofficially obtains a large amount of instruction from the house-officers of the hospital in addition. Furthermore, students now have opportunities to see normal cases delivered at the hospital before being called upon

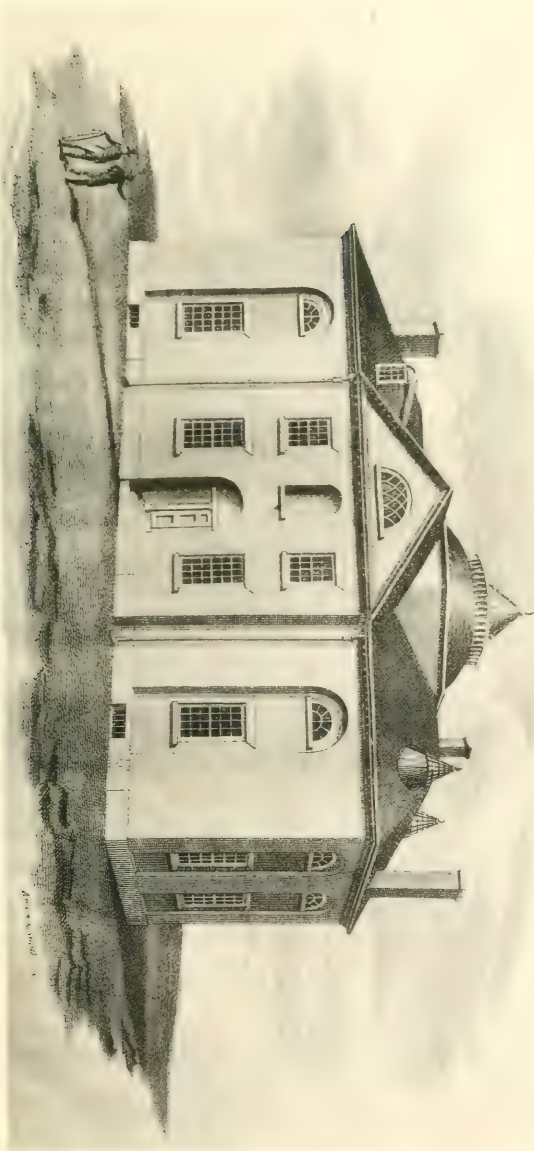
to take charge of cases themselves—a privilege that must add vastly to their peace of mind. In the weekly conference, interesting cases and reports are discussed in the freest possible manner before the whole staff. The summer course is still kept up under the charge of Dr. Swain, but of necessity can be taken by only a few. The course in operative obstetrics started in 1899 continues. The books suggested for collateral reading are those of Reynolds and Newell, Hirst, Lusk, and Dorland.

Last October the new rule making the whole fourth year elective went into effect. The following course is offered in obstetrics :

(1) *Obstetrics*. Half-courses, all day, throughout year.

The course will be given at the Boston Lying-in Hospital and at the Medical School. During the first half of the course the student will lodge at the Hospital, and devote his time chiefly to attendance on cases in the out-patient clinic; he will also be called upon to assist at operations, and, when his other duties permit, to make ward visits with the physician on duty. In the second half of the course he will conduct the convalescence of the cases delivered by him during his resident service, write full reports of his cases, and make daily ward visits, receiving clinical instruction on house patients, and witnessing operations. In his clinical work he will have the supervision and instruction of the Department and of the Hospital Staff on duty. In the second half of his course he will also be given, at the Medical School, a course of demonstrations in operative obstetrics, and each student will practise the various operations on the manikin.

Graduates may take: (1) a course of clinical instruction at the Lying-in Hospital, especial attention being paid to the management of convalescence after confinement—opportunity is given to witness labor cases and operations at the hospital; (2) a course of ten exercises in operative obstetrics with the manikin or cadaver; (3) clinical courses throughout the year as externe of the Lying-in Hospital. The graduate delivers some twelve out-patients, and receives clinical instruction from one of the assistants or officers of the hospital.



THE DEPARTMENT OF LEGAL MEDICINE.

1815.

Originally, legal medicine was taught in the Harvard Medical School as a lectureship; this was in 1815, when it shared with obstetrics the attention devoted to it at that time. In 1818 the combined lectureship was promoted to a professorship and the first to hold office as Professor of Obstetrics and Medical Jurisprudence, in common, was Walter Channing, M.D. What considerations promoted this affinity in medical teaching does not appear. Whether some features in obstetrics seemed to present obvious medico-legal relations or the obstetrical teachers of that date displayed exceptional aptness in imparting instruction in the science and art of parturition, as well as forensic medicine, is not known. But the combined arrangement proved acceptable to the School's administration until 1878, when the days of the lectureship were revived. A fortunate reform in the legislation of Massachusetts in 1877, with reference to the accepted method of investigation of deaths supposed to be by violence, gave occasion for a new chapter in the teaching of legal medicine. This reform substituted a new office for the office of coroner and instituted the position of Medical Examiner as an improvement upon its predecessor. This transfer of important duties to medical men appointed for their "discretion, ability and learning in the science of medicine," clothed with authority to investigate cases of death supposed to be by violence and to determine the cause and manner of the death, supplied an abundance of material which illustrated medico-legal principles, and the occasion was promptly met to divorce legal medicine from obstetrics. The senior Medical Examiner for Suffolk County, whose territory comprised the southern section of the City of Boston, was appointed lecturer in medical jurisprudence in Harvard

University and given charge of forensic medicine as an independent Department. Thus there came under his control and observation for teaching purposes numerous cases illustrating all varieties of deaths by violence, and one of the elements offered by his course of instruction in legal medicine was the demonstration of such deaths in autopsies for judicial purposes performed in the pathological amphitheater at the Boston City Hospital. In this way, the Department of Forensic Medicine came into possession of ample material exemplifying, from week to week before the students, abortions, various kinds of mechanical trauma, suicides, homicides, sudden deaths from mysterious natural causes, infanticides, the fatal effects of electricity, heat, cold, and starvation, noxious gases, fatal burns and scalds, accidents of various kinds, furnishing illustrations, as from a pathological laboratory, of didactic discussions set forth in lectures according to the following syllabus :

1. Definitions and limitations of the subject. Special training required of medical jurists. The calls to practise forensic medicine come without warning. Self-reliance, a result of medico-legal training. Proceedings of a criminal prosecution at law.
2. Medical evidence and the medical witness. Dying declarations an exceptional form of ordinary testimony. The value and use of notes. Expert testimony. Rights and demeanor of the medical witness.
3. Age as an element of identity. Dentition.
4. Sex and doubtful sex. Hermaphrodites.
5. Personal identity. Scars. Tattoo marks. Identification of mutilated remains.
6. Impotence and sterility.
7. Rape. Age of consent. Violation of little girls.
8. Rape of young women. Proofs of virginity. The hymen. Defloration. Seminal stains.
9. Rape of matrons. Anesthesia in rape.
10. Criminal abortion. Proofs of recent childbirth. The corpus luteum. Drugs used as abortifacients. Abortion induced by traumatism. Objective evidences of abortion. The usual causes of death.

11. The signs of death. Scientific tests. Loss of animal heat. Post-mortem lividities.
12. Rigor mortis; time of manifestation, cause. Cadaveric spasm. Putrefaction.
13. Sudden death due to natural causes. Heart disease. Brain disease. The pancreas.
14. Death by drowning.
15. Death by hanging and strangulation.
16. Death by suffocation. Punctate suppurative ecchymoses.
17. Wounds in their medico-legal relations. Incised wounds. Contused wounds.
18. Punctured wounds. Pistol shot wounds.
19. Wounds of regions. Wounds inflicted some time before death. The manner and purpose of the wounding.
20. Infanticide. Was the child born alive or was it dead at birth? The hydrostatic test. The cause and manner of the death.
21. Human blood in its medico-legal relations. Identification of suspected stains. The hæmin test. The microscope as an aid. The serum test.
22. Death by electricity. Lightning.
23. Death by heat, cold, and starvation.
24. Murder by poisoning.
25. Death by illuminating gas.
26. The physician's legal relations to his patients. Malpractice.
27. The technic of a medico-legal autopsy.

In 1877 Dr. F. W. Draper was appointed to the position of lecturer in forensic medicine and the composite teaching of obstetrics and medical jurisprudence was discontinued. In 1884 he was promoted to the grade of assistant professor, and in 1889 to the position of Professor of Legal Medicine. To assist him in his duties Dr. Edwin Wells Dwight was appointed instructor in legal medicine. In consequence of impaired health, Professor Draper was granted a leave of absence during the school year 1902, and in 1903 he offered the resignation of his professorship and the vacancy was not filled.



THE DEPARTMENT OF SURGERY.

1835.

When the Harvard Medical School was founded, September nineteenth, 1782, John Warren was placed in charge of the Anatomical and Surgical Departments. He was elected professor on November twenty-second of that year. The plan in use at the University of Edinburgh at the time appears to have been adopted — as in that school the professorships of Anatomy and Surgery were held by *Monro*, a teacher to whom many of our pioneers owed their education.

John Warren had already had some experience in both these branches of medicine. His anatomical society was the first medical society of students formed in America (1771), and his experience as a surgeon in the Revolutionary Army enabled him to obtain the position of superintending surgeon of the Military Hospital at Boston, where he had the opportunity of giving a course of anatomical demonstrations. Although the scope of surgery at that day was limited, Dr. Warren had shown his ability in that branch of medicine by operating successfully upon a dermoid cyst of the ovary and performing a successful amputation at the shoulder joint.

He appeared, therefore, to be competent to meet the requirements laid down by the College authorities, viz.: "That the professors demonstrate the anatomy of the human body on recent subjects if they can be procured; if not, on preparations duly adapted to the purpose. That they elucidate this by physiological observations on the parts and explain and perform a complete system of surgical operations."

There existed at that period in Boston a military hospital and Almshouse in both of which Dr. Warren had a service and in addition the apprenticeship method of instruction enabled him to give

his students the opportunities for clinical study which his practice afforded. The necessity for clinical facilities for the School was recognized at an early date by the Corporation of the College and in 1784 they petitioned the overseers of the poor to place the sick in the almshouse, the only hospital in Boston, under the care of members of the Faculty of the Medical School "for the further carrying into effect the designs of the Medical Institution." This movement met with opposition from the profession in Boston and it was not finally carried out until 1810. Meanwhile surgery was taught by means of lectures, text-books, and an occasional surgical operation. The lectures were given at Cambridge in the basement of Harvard Hall until Holden Chapel was rearranged for the purposes of the School, and different rooms were assigned to the three Departments, Anatomy and Surgery, Theory and Practice, and Chemistry and Materia Medica.

The difficulties in carrying out these somewhat primitive arrangements were quite out of proportion to the results obtained, as only one of the professors resided in Cambridge and it was necessary at that time to cross to Cambridge by ferry or to ride through Roxbury, a distance of nine miles. The professor of this Department of the School being engaged in active practice petitioned the Harvard Corporation to grant him an assistant. John Collins Warren was accordingly on May fourth, 1809, appointed Adjunct Professor of Anatomy and Surgery, an office created April twenty-seventh, 1808.

With the enlargement of the Faculty and the removal of the School to Boston in 1810, instruction received a new impetus which developed into the system which was to prevail more or less universally throughout the country until the middle of the nineteenth century.

The pioneers in medical education were self-taught men. Their knowledge of the masters, ancient and contemporaneous, was

gleaned from the army surgeons who had had the advantage of study in Europe. Books were scarce and costly, newspapers and periodicals almost unknown, teaching was by word of mouth and clinical advantages were limited, but yet we find in the methods of those days one of the features of the most efficient teaching as it exists at the present time, namely, section teaching. The apprenticeship system as it had existed previous to the foundation of the School was continued, as indeed it had to be in order to furnish clinical material for the student. This brought the preceptor in close contact with the pupil and conditions obtained during the early part of the century closely resembling what are now considered as the most advanced modern methods.

The two men most intimately concerned in the development of surgery at the Harvard Medical School during the first seventy years of the nineteenth century were John C. Warren and Henry J. Bigelow.

At the beginning of the century Warren had returned from Europe, where he had studied under Sir Astly Cooper, Dubois, and others, and entered immediately upon the duties of teacher. He opened a private dissecting room in Boston and his clinic at the almshouse was a valuable aid to the slowly developing Medical School.

When the School was transferred to Boston, Dr. Warren shared the labors of his father and taught surgery and midwifery, while the elder Warren devoted his lectures and demonstrations to anatomy and physiology. This arrangement prevailed until the death of John Warren (April fourth, 1815) when John C. Warren was elected Professor of Anatomy and Surgery (May tenth, 1815) and Walter Channing was elected to the newly created lectureship on midwifery.

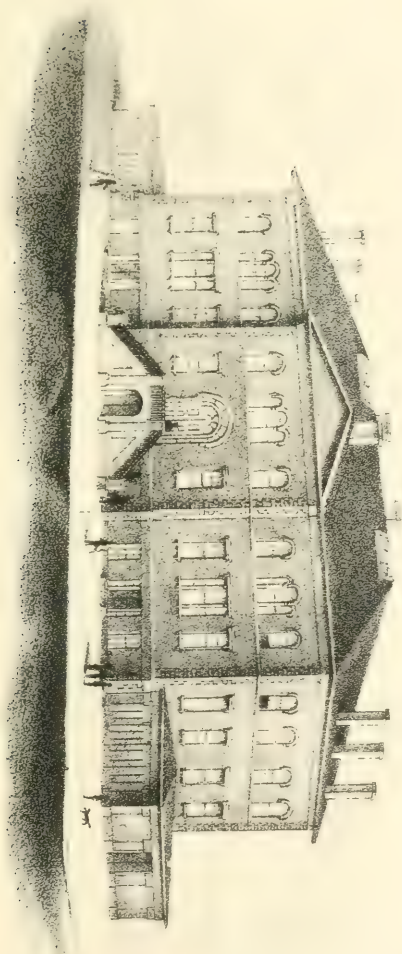
The Massachusetts General Hospital was first opened for the reception of patients in 1821. Warren was chosen surgeon to the

hospital, and the students at the Medical School were admitted to the operations upon the payment of a fee. It is true the number of operations at that period was small; anesthesia was still a quarter of a century away and capital operations were few and far between. In a circular issued by the Faculty in 1823 attention is called to the fact that during twenty months, from September twenty-first, 1821, to June eleventh, 1823, there had been forty-six operations performed in the hospital.

The opportunities of the students if not extensive were fairly varied in character and probably fairly well suited to the limited needs of the time. Although the more important operations of surgery were not often seen by the student, minor surgery was considered well worth the attention of the teacher and formed the bulk of the demonstrations and talk before the class.

The passage of the Massachusetts Anatomy Act of 1830 paved the way for the separation of anatomy from surgery in the Medical School curriculum.

The professorship of the Principles of Surgery was established January fifteenth, 1835, it being provided that: "It shall be the duty of the professors to give elementary lectures on the principles of surgery and clinical lectures on the surgical cases in the Massachusetts General Hospital." It was further provided that: "The same attendance on the lectures in this Department shall be required of the candidate for the degree of Doctor of Medicine in the University as is required on the lectures in other Departments of the Medical Faculty." George Hayward was elected to fill this position and it was arranged that Warren should teach operative surgery, and that Hayward should teach clinical surgery. This made many changes in the method of instruction and the term was extended to four months. The most notable feature of this period was the development of private medical schools wherein a new generation of able young practitioners utilized the



clinical advantages of the growing hospital to a far more profitable extent than had been done before.

The influence of the French school predominated at this period. As surgical operating technic improved under the hands of the masters of the early part of the century, speed and brilliancy became the essential features at a time when the quivering nerves of the conscious patient enforced haste. Operative surgery was then principally surface surgery and was thus rapid and spectacular. Surgery had not burrowed into the cavities of the body, nor explored the crypts of the gall-bladder, the kidney, the pancreas, and the brain. The pose of the operator as the only actor on the scene emphasized the fact that surgery was amphitheater surgery. It was not, however, until the influence of anesthesia, introduced about this time, had multiplied surgical operations that this new type of operator reached its highest development.

Morton had applied to the head of the Department for an opportunity to try his new method of relieving pain in surgery ; he was equal to the occasion and made the crucial test by which anesthesia was given to the world (October sixteenth, 1846).

This event occurred as the School was being transferred from the building in Mason street to the new building just finished on North Grove street. The new building was opened on November fourth of that year with appropriate ceremonies. Dr. Warren shortly after resigned his professorship (February fifteenth, 1847), and was made Emeritus Professor of Anatomy and Surgery ; Hayward was given the title of Professor of Surgery (April third, 1847), and the professorship of Anatomy was assigned to a new Department. Hayward did not continue long to fulfil the duties of this office, and after making an arrangement by which his colleagues at the hospital relieved him of his clinical lectures, he resigned his professorship March thirty-first, 1849, and on April twenty-eighth, 1849, Henry J. Bigelow was elected Professor of Surgery. Dr. Bigelow had

been appointed surgeon at the hospital in 1846, shortly after his return from Europe, and had already displayed that skill as an operator and lecturer which later contributed so much to the success of this Department of the School. At the outset of his career the amphitheater and lecture-room became crowded with students who marvelled at the dexterity with which he operated and the genius of the teacher. The impetus given to surgery by anesthesia increased enormously the number of operations and many new and more elaborate methods were devised. All this greatly increased the interest taken by the student in this Department of Medicine. But the surgery of that day was surgery of the experts, and availed little for the ordinary practitioner. Students played the part of passive spectators. They learned by the sense of sight alone. The few positions offered to students were those of clinical clerks and dressers. The opportunities offered for study of minor surgery in the Out-patient Department were very few. Ward visits were superficial and hasty, diagnosis was not taught here as in Germany, and our students began to visit that country and go over the ground again.

With the advent of younger teachers, Drs. R. M. Hodges and David W. Cheever, more clinical teaching was given, and as the Boston City Hospital was then a novelty and in some sense an experiment it happened that surgery there was carried on vigorously in competition with the older hospital. Dr. Hodges was so fine an anatomist that he impressed that element with his teaching, and Dr. Cheever assiduously and laboriously explained and exhibited more and more clinical material. The first purely clinical exercises given in Boston were by him at the City Hospital, where visits were made with small classes and with great care as to details in teaching. On January twenty-seventh, 1866, Hodges was elected Adjunct Professor of Surgery, and on January fifth, 1868, Cheever was transferred from the position of Assistant Professor of Anatomy

to that of Adjunct Professor of Clinical Surgery. It was now possible to make a step in advance, and the amphitheater and lecture-room no longer dominated over bedside teaching. As the amount of instruction given the student increased it was found necessary to lengthen the course, and in 1867 the session was continued through the spring months.

In the reorganization of the School in 1871 surgery and clinical surgery were assigned to the second and third years, and consisted of three lectures and one recitation weekly during the first term; one recitation and one lecture during the second term with an additional course on minor surgery and practical instruction in surgical anatomy. The weekly exercises in clinical surgery were two in the first term and three in the second term.

Professor Bigelow had now reached the height of his career and had published his methods of reduction of dislocations of the hip and his operation for litholapaxy, which added much to the reputation of the School.

In 1871 J. Collins Warren was appointed Instructor in the Medical School and the following year he received the title of Instructor in Surgery, and in 1873 Charles Burnham Porter received a similar title. These were Faculty appointments, that is, they entitled the holder to a seat in the Faculty, and were among the first of the kind.

Instruction in surgical histology was now given for the first time. This was made possible and effective by the introduction of stained sections of tumors and morbid specimens. A course on bandaging and the application of surgical apparatus was also begun at this time. Both of these courses were given by Dr. Warren, who also had recitations in surgery and surgical pathology. These exercises were given to second year students.

To Dr. Porter was assigned the course in operative surgery and instruction in clinical surgery. A full professorship of Clinical

Surgery was established March twenty-ninth, 1875, and David W. Cheever was elected to fill that position, and in May, 1875, an examination in clinical surgery was established.

In 1881 orthopedic surgery was taught separately from general surgery and placed under the charge of Edward H. Bradford, who was elected Assistant in Clinical Surgery October tenth, 1881.

Professor Bigelow resigned in 1882 and was made Emeritus Professor of Surgery. On June twenty-sixth, 1882, Dr. Cheever was elected Professor of Surgery, and Drs. C. B. Porter and J. C. Warren were made Assistant Professors of Surgery (February thirteenth, 1882).

Surgery was now taught more systematically; a co-ordination was attempted in the arrangement of the surgical demonstrations, and cases were selected with a view to illustrate different topics, rather than those which possessed a peculiar interest to the teacher. Ward visits became a regular part of the plan of instruction and individual students were receiving and properly digesting more knowledge of medicine and surgery than had hitherto been attainable at any medical school in the country. The growth of the School showed the eagerness with which medical students and practitioners recognized these new advantages. About this time (December tenth, 1883) Maurice Howe Richardson was added to the Surgical Department corps of teachers as Assistant in Surgery. During this period Dr. Porter had charge of the Department of Clinical Surgery, while Dr. Warren assisted Dr. Cheever and also gave lectures in surgical pathology. On March fourteenth, 1887, Porter was elected Professor of Clinical Surgery and Warren was elected Associate Professor of Surgery.

While the systematic course of lectures on surgery was enlarged to cover more ground in surgical pathology, the increase of clinical material permitted a greater elaboration in the course of clinical surgery. The number of available cases grew from about 44,000

in 1870, to 100,000 in 1892, at which time the four years' course was established. Instructors and assistants and lecturers on special subjects were added to the teaching corps as necessity demanded. Under Professor Porter's management a new departure was made in teaching in small sections at the two hospitals, a method which has been maintained and amplified so as to become a predominating feature of the course of study in the more advanced schools. In 1895 the operative course consisted of sixteen exercises demonstrating surgical operations by Professor Porter; followed by twenty-four hours of laboratory work in the repetition of the operations by each student under the supervision of an assistant for each group of six students. As a sequel of the clinical section work, each student was obliged to report three to five surgical cases, which counted in his mark for a degree. He was also required to examine and make a report upon one case of fracture. The clinical conference case reported by the student was gradually developed into an exhaustive paper on the subject treated, and many contributions of merit were the outcome of this exercise.

On May twenty-ninth, 1893, Dr. Cheever resigned and was made Emeritus Professor of Surgery, a position which he now holds. Dr. Warren was elected Professor of Surgery. The title was subsequently changed to that of Mosely Professor of Surgery on May twenty-ninth, 1899. At this same meeting of the Corporation, Herbert Leslie Burrell was elected Assistant Professor of Surgery, he having completed the five previous years as Assistant Professor of Clinical Surgery. Maurice Howe Richardson was elected Assistant Professor of Clinical Surgery (June fourth, 1892). Both of these teachers are now Professors of Clinical Surgery (elected March second, 1903), promotions which followed the retirement of Dr. Porter, who resigned his professorship the preceding year.

The development of the clinical facilities for instruction had made

it possible to further develop the teaching by a more elaborate co-operation between the two Departments of Surgery and Clinical Surgery. The two courses, which had been more or less independent, were gradually combined until at the present time with that of orthopedic surgery and genito-urinary surgery they form the Division of Surgery. This also includes what may be regarded as the Department of Surgical Pathology. The first instruction authorized by the Medical School under this latter title was in 1897, when Dr. E. H. Nichols was appointed Demonstrator of Surgical Pathology and gave an elementary voluntary course to members of the second class. This included exercises on inflammation and repair, and the pathology of various regions of surgical importance. There were lectures and demonstrations combined with histological study of the various lesions. In 1904-5 it was made required and the mark received counted in the course in surgery. In 1901 Dr. Nichols was made instructor in surgical pathology and in 1904 Assistant Professor of Surgical Pathology. In 1901 a laboratory of surgical pathology was established and placed in his charge. Opportunity is there given for surgical investigation.

After the reorganization of the Department following the retirement of Professor Bigelow, instruction was given separately for the first time in genito-urinary surgery. This was placed under the charge of Dr. A. T. Cabot, who was appointed instructor in genito-urinary surgery, and later by Dr. F. S. Watson, who held a similar appointment. After Dr. Cabot's appointment as a member of the Corporation of the University, instruction was continued in this Department by Dr. Watson, who became lecturer in surgery, and continued to give lectures in this field of surgery — (1901-2). Dr. Paul Thorndike, who was previously an assistant, was then made instructor in genito-urinary surgery. This course consisted of lectures to the third class and practical instruction in the clinics in sections. At the present time there is a short required course in

the third year with a brief examination and an elective course during the fourth year.

The course on operative surgery has been and still is an elective. It is designed to enable students to become familiar, by practice on the cadaver, with the technic of surgical operations. Each student has the opportunity of witnessing demonstrations of the various operative procedures and of repeating them under the personal supervision of an instructor.

These courses, which were originally given in the spring to a large number of students, are now given throughout the year to small sections at a time. The individual has an opportunity to perform not only the time honored ligations and amputations but is instructed in all the new operations on the cavities of the body. The course is at the present time under the charge of Dr. G. H. Monks and is given to fourth year students.

The instruction given by the Division of Surgery at the present time begins with the second year. In January of that year a laboratory course in surgical pathology is given to the whole class. These exercises are three hours each and amount to sixty hours to each class. A series of clinical lectures follows, in which the conditions studied in this primary course are illustrated. These lectures are given three days a week during January at the Boston City Hospital. During the second half of the second year and in the first half of the third year the instruction consists of systematic lectures and recitations at the Medical School, and the subjects there discussed are illustrated by clinical lectures at the hospital. Demonstrations of specimens are given at the hospital and from time to time instruction in sections is given in the Museum.

The course on surgical technic is given as early as possible in the second year; it consists of six hours of lectures to the entire class and of twelve laboratory exercises of two hours each to the class

in sections. The student is taught the application of bandages and surgical apparatus, and the preparation and application of surgical dressings. There is also instruction in numerous necessary procedures such as the use of enemata, hypodermic medication, heat and cold, and poultices. This is carried on by Dr. Howard A. Lothrop. The student after this preparation is required to serve one month in one of the hospital Out-patient Departments as surgical dresser; he here receives instruction in anesthesia and in minor genito-urinary surgery. At the beginning of his third year while still attending surgical exercises at the School he is brought into personal contact with the patient at the bedside and has practical experience in the study of the cases particularly with reference to diagnosis, prognosis, and treatment. The blending of the instruction in systematic surgery, clinical surgery, orthopedics, and genito-urinary surgery is as complete as it is possible to arrange it.

In the fourth year the courses are entirely elective. These electives are given as half courses and may be taken the entire day for one month, or half days for two months. Each half course counts one hundred and twenty-five hours (eight half courses, one thousand hours of work, are required of each student in the year). The Division of Surgery offers half courses mornings throughout the year in clinical surgery, surgical pathology, and in genito-urinary surgery; half courses afternoons throughout the year in orthopedics and in surgical pathology. In surgery there are half courses all day throughout the year. It is the aim of the Division to teach its students what underlying conditions, both physiological and pathological, are probably present in a given case, to train them in good methods, to make them conversant with the opinions of reliable authors, and, while skilled in the technic of surgery to be conservative and safe in practice.

In conclusion a word may be said about the great advantages which this Division of the School expects to enjoy in the new buildings.

The Surgical Division is to have a laboratory in the David Sears Building. Seven unit rooms have been set apart for the purpose. The rooms will consist of one large laboratory and a small operating room, with a library and secretary's room across the hall. The large laboratory will be filled with the furniture and apparatus of a well-equipped pathological laboratory, and the operating room with all the apparatus necessary for aseptic surgery. There will be a departmental library which will serve as a meeting place for members of the Division. The secretary's room will be arranged to contain the records of this Department and may be used by an artist. The management of the surgical laboratory, under the Professor of Surgery, will be in the hands of the Committee on Surgical Research. It is intended that opportunity shall be given for any qualified student or graduate to investigate surgical problems, whether of surgical pathology, physiology, or operative surgery.

The laboratory for surgical pathology, under the charge of the Assistant Professor of Surgical Pathology, is also to have admirably equipped and adequate quarters. It is in the Collis P. Huntington Building. There are special rooms for the director and his assistant and rooms for special investigations. There is an excellently equipped operating room and a room for the artist and secretary.

The X-ray laboratory occupies four rooms in the basement of the Administration Building. They will be devoted to the following uses: The largest is arranged for the accommodation of three or four sets of X-ray apparatus, which shall represent the best makes of machines to be found. There will probably be one to represent each of the three types now in general use, that is: a static machine, a simple induction apparatus, and a high frequency

apparatus. The room is so arranged that each can be kept in an alcove by itself, separated by brick walls from the others. The room is large enough to accommodate other forms which may be invented in the future. Of the three smaller rooms, one is a dark room for the development of plates. This is so arranged that a number of students will be able to develop at the same time. Another room is for the storage of plates and for the reception of students or patients. The third small room is for the convenience of the chief of the laboratory.

The scope of instruction in the X-ray laboratory includes two kinds of teaching. First, routine instruction given to every student. It is intended that each student who graduates from the Medical School shall at least understand the general theory of the production of X-rays, the method of taking an X-ray picture and the practical uses, dangers, and fallacies of X-ray work in medicine and surgery. The second kind of teaching will correspond to the advanced courses in other Departments of the School and will aim to give an opportunity to all graduates to pursue original investigation in this work and to equip themselves for taking up this branch as a specialty.

The accommodations for operative surgery are in the Anatomical Building. There is one operating room large enough for six tables and another one for four. There is a room for instruments, diagrams, models, etc., another for the prosector and still another for the instructors, thus giving ample opportunities both for students and graduates. Two large rooms in the Administration Building have been set aside for the course in surgical technic. They are to be fitted up with all the necessary appliances, including among others thirty models for bandaging, benches with the necessary tools for the making of metal and wooden splints, conveniences for the application of plaster of Paris dressings, together with the necessary furnishings and a store-room for the materials used in the course.



THE DEPARTMENT OF PATHOLOGICAL ANATOMY.

1847.

This Department began with the appointment in 1847 of Dr. J. B. S. Jackson as Professor of Pathological Anatomy and as Curator of the Warren Anatomical Museum. Before that time it was the custom for the clinicians to teach what little pathological anatomy the students learned. The subject was not required for a degree until 1856. It is of interest to know that Harvard was the first medical school in this country to teach pathology as a special course.

In 1854 the professorship of Pathological Anatomy was endowed by George Cheyne Shattuck and received the title of Shattuck professorship of Morbid Anatomy. In 1879 the title was changed to Shattuck professorship of Pathological Anatomy.

Dr. Jackson studied in Paris under Dupuytren, Roux, and Lisfranc; in London under Bright, Addison, Hodgkins, and others. Although a practitioner of medicine during his entire life, his chief interest lay in pathological anatomy. As curator of the Boston Society for Medical Improvement he greatly developed its "Cabinet" or museum. In 1871 this collection was given to Harvard College under the name of the Jackson Cabinet, and placed in the Warren Anatomical Museum of which he had long been curator and which museum also he built up to a high degree of usefulness.

Dr. Jackson's fame will rest chiefly and securely on his work as curator, a position in which he showed unusual powers of intelligent observation and great zeal in the collecting of useful and instructive pathological specimens. Parts only of his labors as curator were even published: in 1847 a Descriptive Catalogue of the Museum of

the Society for Medical Improvement; in 1870 a Descriptive Catalogue of the Warren Anatomical Museum.

In 1879 Dr. R. H. Fitz was made the head of the Pathological Department and held the position until 1892, when he was appointed Professor of the Theory and Practice of Physic. His successor, Dr. W. T. Councilman, the present head of the Department, was called from the Johns Hopkins Hospital. Dr. Fitz was trained under Virchow and Orth, and as a teacher of pathology was a pathological anatomist with a strong leaning towards clinical medicine. Dr. Councilman, trained under Cohnheim, Chiari, von Recklinghausen, Weigert, and Welch, is by nature a pathological histologist.

The following is a list of the men who have held appointments in the Pathological Department :

John Barnard Sweet Jackson, Professor of Pathological Anatomy, 1847 to 1854; Shattuck Professor of Morbid Anatomy, 1854 to 1879.

Reginald Heber Fitz, Instructor in Pathological Anatomy, 1870 to 1873; Assistant Professor of Pathological Anatomy, 1873 to 1878; Professor of Pathological Anatomy, 1878 to 1879; Shattuck Professor of Pathological Anatomy, 1879 to 1892.

William Thomas Councilman, Shattuck Professor of Pathological Anatomy since 1892.

Elbridge Gerry Cutler, Assistant in Pathological Anatomy, 1878 to 1882.

William Whitworth Gannett, Instructor in Pathological Anatomy, 1886 to 1891.

Henry Francis Sears, Assistant in Pathology, 1891 to 1892.

Frank Burr Mallory, Assistant in Pathology, 1891 to 1893; Instructor in Pathology, 1894 to 1896; Assistant Professor of Pathology, 1896 to 1901; Associate Professor of Pathology since 1901.

William Herbert Prescott, Assistant in Pathological Histology, 1892 to 1896.

James Homer Wright, Assistant in Pathology, 1893 to 1896; Instructor in Pathology since 1896.

Edwin Welles Dwight, Assistant in Pathology, 1893 to 1894.

Edward Wyllys Taylor, Assistant in Pathology, 1893 to 1896.

Edward Hall Nichols, Assistant in Pathology, 1896 to 1899.

Joseph James Curry, Assistant in Pathology, 1896 to 1897.

Arthur Howard Wentworth, Assistant in Pathology, 1897 to 1899.

George Burgess Magrath, Assistant in Pathology, 1898 to 1905.

Mark Wyman Richardson, Assistant in Pathology, 1898 to 1900.

Richard Mills Pearce, Instructor in Pathology, 1899 to 1900.

Joseph Hersey Pratt, Instructor in Pathology, 1900 to 1902.

Frederick Herman Verhoeff, Assistant in Pathology, 1900 to 1902.

Henry Asbury Christian, Instructor in Pathology, 1902 to 1905.

Ernest Edward Tyzzer, Assistant in Pathology since 1903.

Frederick Robertson Sims, Assistant in Neuropathology, 1903 to 1904.

Walter Remsen Brinckerhoff, Assistant in Pathology, 1903 to 1905; Instructor in Pathology, 1905 to 1906.

Elmer Ernest Southard, Instructor in Neuropathology, 1904 to 1906; Assistant Professor of Neuropathology, 1906.

Clarence Whittier Keene, Assistant in Neuropathology, and Assistant in Pathology, 1904 to 1905.

Simon Burt Wolbach, Assistant in Pathology, 1905 to 1906; Instructor in Pathology, 1906.

Harry Chamberlain Low, Assistant in Pathology, 1905 to 1906.

Alexander R. Robertson, Assistant in Pathology, 1906.

But little space was required in the early days of pathology in the Harvard Medical School for the laboratory or workshop of the

Department. The chief work was the collection and preservation of gross anatomical specimens which were stored in the Warren Anatomical Museum. With the development and introduction of microscopes a large room was fitted up in 1871 in the attic of the North Grove street building for the use of the students. In the Boylston street building the pathological laboratory consisted of a desk-room for students used in common with the Department of Embryology and of a moderately sized room beneath the Anatomical Amphitheater for the use of the teaching staff.

In 1890 the commodious Sears Laboratory, the gift of Dr. Henry F. Sears, of Boston, was formally opened and given over entirely to the Departments of Pathology and Bacteriology. From here these Departments will move into the Huntington Laboratory, where every opportunity, so far as a well arranged and splendidly lighted building alone can afford it, is offered for the development of the subject of pathology in its broadest sense. The only criticism that can be made in regard to the arrangements in the new buildings is that it is unfortunate that it has seemed advisable to place the pathological collection in the Warren Anatomical Museum, which is so far distant from the Pathological building. To obviate this difficulty to some extent, provision has been made in the laboratory for housing a teaching collection of pathological specimens.

With regard to future work it must be recognized that pathology is departing from the narrow anatomical point of view which dominated it so long. The anatomical view was the important one when the chief work in pathology was the classification of diseases and the ascertaining of the series of anatomical changes which were associated with more or less well defined clinical conditions. Its work now is more in relation to the causes of disease, and the manner in which the causative agents act in the production of lesions. It seeks also to ascertain the relation between anatomical lesions and clinical phenomena. The sure foundation for its

successful work lies in the experiment. Its relations with the other branches of medicine become closer each day. It must stand in the closest relation with the clinic—for many of the questions which are to be solved by the methods of the pathological laboratory come from the clinic. With anatomy and embryology its relations must be equally close, for without knowledge of normal development that large part of the subject which concerns the tumors would be an unknown field. The Department has derived great advantage from having within it a number of men whose work is in special fields. The work in neuropathology and in surgical pathology has been especially valuable not only in bringing the Department into closer relation with the clinic, but also by the introduction of more accurate knowledge in obscure fields. The special worker finds the general knowledge and the possibility of comparison which the laboratory gives of equal value to him.

The Department has, in addition to its own laboratory, control of the pathological laboratories of the Massachusetts General, Boston City, Long Island, Children's, and Carney Hospitals. The numbers in the staff of each are as follows :

	Teaching Staff.	Visiting Staff.	Working Staff.	Clerical and other Assistants.
Pathological Laboratory, H.M.S.	6	.....	.....	3
“ “ B.C.H. ....	.....	2	6	4
“ “ M.G.H. ....	.....	.....	2	3
“ “ Ch.H. ....	.....	1	1	
“ “ L.I.H. ....	.....	.....	1	
Carney Hospital.....	Work done at School laboratory.			

The basis of the course of instruction in pathology as given at the present time is microscope work in the laboratory. The

subject is presented chiefly from the point of view of general pathology. The students study and see for themselves the essential changes produced in various tissues and organs by a great variety of injurious agents. A thorough grounding in these changes enables them to understand more intelligently the appearances presented by altered organs seen at autopsies, and later to appreciate more clearly the signs and symptoms present in the medical and surgical cases which they study clinically.

In addition to the microscope work there are lectures on general and special topics, usually illustrated with lantern slides, and numerous demonstrations (to small sections of students) of fresh organs obtained from autopsies at the different hospitals and of preserved specimens from the pathological collection. Small groups of students attend the post-mortem examinations at the hospitals and often take an active part in them. A moderate amount of histological technic is taught.

With fourth year students, who elect pathology, the attempt is made to combine so far as possible the clinical symptoms with the lesions found post-mortem. They, therefore, are required to obtain the clinical history of each case which comes to autopsy and to study it in comparison with the gross and microscopic changes which they find present.

The Pathological Department resembles the Clinical Departments in this respect, that its usefulness to a large extent depends on hospitals from which it may obtain its pathological material. For this reason the relations of the Department with the different hospitals in Boston have always been intimate. At the present time, as already stated, members of the Department are in charge of the pathological laboratories of the Massachusetts General, Boston City, Long Island, Children's, and Carney Hospitals. Students in small sections attend the post-mortem examinations at these hospitals and occasionally assist at them. The amount of fresh

material which may be brought to the School for demonstration purposes is, however, unfortunately very limited owing partly to opposition of some of the hospitals to material being taken away and partly to the desire of clinical men to keep and demonstrate the autopsy specimens to their own classes. On this account, in order to obtain more material for demonstration purposes, the Department undertakes at moderate rates to make autopsies and examine pathological specimens for private physicians. The money thus obtained is used for laboratory expenses connected with the work.

The kind of work which comes within the province of the pathologist is, aside from teaching, partly practical and partly theoretical. The practical work consists of (*a*) making post-mortem examinations at the hospitals and in private practice in order to determine for each case the causes of the signs and symptoms presented during life and the cause of death. Physicians desire autopsies in order to correct errors, broaden their experience, and better enable them to diagnose and treat other cases presenting similar symptoms in the future; (*b*) the examination of surgical specimens, fluids, blood, and so on, in order to determine the lesion present and throw light if possible on prognosis and treatment.

The theoretical work possible is limitless. At the hospital laboratories the investigations taken up are mainly problems suggested by the material of various sorts, both pathological and bacteriological, which comes to the laboratory for examination. At the School no limitations are imposed.

It has been the policy of the Department for the past fourteen years to afford every opportunity possible to young men interested in pathology to obtain a deeper knowledge of the subject than is possible in the regular course of instruction offered in the School. The primary object of this policy has been to develop men trained in pathology from whom the instructors in the Department could

be selected. It was considered foolish to expect that other schools would develop men for the use of Harvard. These men have received their training chiefly in the pathological laboratory of the Boston City Hospital and from them the instructors at the School have been selected. Many of these trained men have been offered and have accepted good positions in other medical schools and hospitals, or have gone into that branch of clinical work for which their training fitted them. In fact the demand for well-trained men has been greater than the supply.

The following is a list of some of those formerly in the Department who now hold other positions:

E. H. Nichols, Assistant Professor of Surgical Pathology at the Harvard Medical School.

R. M. Pearce, Professor of Pathology and Director of the Bender Hygienic Laboratory, Albany Medical College.

H. A. Christian, Instructor in the Theory and Practice of Medicine, Harvard Medical School.

E. E. Tyzzer, Director of the Caroline Brewer Croft Cancer Commission, Harvard Medical School.

W. R. Brinckerhoff, Director of the U.S. Leprosy Investigation Station at Molokai, Hawaii.

Several other men trained under this system, but never connected with Harvard, hold important positions in other schools and hospitals.

T. Leary, Professor of Pathology and Bacteriology in the Medical Department of Tufts College.

F. T. Fulton, Pathologist to the Rhode Island Hospital, Providence, R.I.

H. S. Steensland, Lecturer on Pathology, Medical Department of Syracuse University.

R. L. Thompson, Assistant Professor of Pathology, Marion Sims-Beaumont School of Medicine, St. Louis.

C. W. Duval, Pathologist to the Montreal General Hospital.

The training which the men have received has been of two sorts, drill in the practical work of bacteriology and pathology, such as is found in connection with any large hospital; and training in the investigation of some of the interesting problems presented by the hospital material. As a matter of fact it has been found that the best men require little or no direction, only unhampered opportunity for developing themselves.

The pathological laboratory has a large library, containing full sets of many of the pathological publications, for which it is indebted almost entirely to the generosity, extending over many years, of Dr. Henry F. Sears. This library is used not only by the School laboratory staff but also by the men working in the hospital laboratories and by graduate students. The library maintains most of the current publications on pathological and bacteriological subjects and has many of the most important pathological monographs. The library forms, therefore, the central meeting-place for all men in Boston interested in pathology.

For many years the members of the various pathological laboratories (in Boston), together with graduate workers in them, have met during term time once a week in the evening at the School in order to review pathological literature, discuss cases of interest which have been seen, and present the results of special investigations. These meetings have served to keep the men in touch with the results of pathological work going on all over the world as well as locally, have stimulated them to their best endeavors, and have promoted good feeling and generous rivalry.

The effect of having members of the teaching staff in the Harvard Medical School in charge of the hospital laboratories, of maintaining a departmental library, and of having weekly meetings for general instruction and consultation, has been to make the School laboratory the pathological center of Boston and the neighboring cities.

Research work in pathology has always been encouraged in the belief that it is the best way to develop teachers and keep them in a position to understand and appreciate the work going on in their particular field in the rest of the world. On this account every instructor is urged and is expected to produce a certain amount of original work each year. As a result of this policy the publications of the Department have been numerous and of considerable value.

Research work in pathology has not been confined to the instructors only, however. The same policy holds for the assistants in the hospital laboratories. In addition many graduates have worked in the laboratories and some of them have produced very creditable work.

The publications of the Department have been numerous and important, but the list of them is unfortunately too long to be inserted here. The catalogues published by Dr. Jackson have already been mentioned. Next in chronological order are the very important monographs of Dr. Fitz on appendicitis and pancreatitis, to mention only two of his many valuable papers. The work of the Department in the last thirteen years has been extensive along many lines. It may be briefly summarized as follows: three monographs on the subjects, epidemic cerebrospinal meningitis, diphtheria, and smallpox; a text-book on pathological technic; and many papers on the causal agents of certain diseases such as actinomycosis, Madura foot, Aleppo boil, gonorrhea, glanders, and scarlet fever; on the histological changes in various pathological processes such as acute and subacute nephritis, typhoid fever, and necroses of the liver; on bacteriological and microscopical technic; and on tumors in general and gliomata in particular.



THE DEPARTMENT OF CLINICAL MEDICINE.

1854.

Although the Quinquennial Catalogue states that the professorship of Clinical Medicine was first established in 1854 and first named the Jackson professorship in 1858 (in honor of James Jackson, M.D.), the Medical School catalogues refer to the Professors of Clinical Medicine at a much earlier date.

Apparently, James Jackson was himself the first to receive the title. In 1810, when the Medical School was moved from Cambridge to Boston, Dr. Waterhouse (then Hersey Professor of the Theory and Practice of Physic) refused to be moved from Cambridge and, in order practically to replace him, the new title, Professor of Clinical Medicine, was created for Dr. James Jackson. His compensation consisted of such fees as he could collect, and the only clinical facilities at his disposal were those afforded by the Boston Almshouse. He held the office but two years; for in 1812 Dr. Waterhouse resigned, and James Jackson succeeded to his position as Professor of the Theory and Practice of Physic, "continuing" (however) "to perform the duties of Professor of Clinical Medicine until another should be chosen." With this understanding, James Jackson taught wholly unaided for twenty years.

That the teaching was distinctly clinical during the earlier years, or in fact up to the time of Dr. Bowditch (1859), we have little reason to believe. Students came to the Medical School to attend lectures; and, if they had any clinical instruction, it was obtained mainly under the supervision of private instructors not connected with the School. The private patients of these instructors, seen in their homes and in the instructor's office, furnished most of the clinical experience of the student up to 1850. At its best this clinical instruction must have been of great value, something

indeed to be envied by the student of to-day, who often enough wishes that he might see something of the private practice of medicine outside of the hospitals before he plunges into it for himself. Yet in some cases the student got little or no clinical experience through his instructor, and merely pursued a course of reading under a supervision which was chiefly nominal.

In 1833 the Harvard College Catalogue makes the following vague statement regarding the clinical opportunities offered to students: "The lectures for medical students are delivered at the Massachusetts Medical College in Boston. They continue four months. During the lectures the students may find in the city *various opportunities* (italics inserted) for practical instruction." That is the whole description of clinical medicine in the catalogue of that date.

The first mention of a hospital is in 1835, when it is stated in the catalogue that students attending the lectures in theory and practice may attend the medical visits at the Massachusetts General Hospital. In the catalogue of this date there is no separate Department of Clinical Medicine, nor does the phrase "clinical medicine" occur in any catalogue between 1835 and 1844.

In this catalogue of 1844-45 we find that in the Department of Theory and Practice and Clinical Medicine, Professors Ware and Jacob Bigelow gave for fifteen dollars a course of clinical lectures (two hours each) on cases at the Massachusetts General Hospital (twice a week). "Abundant opportunities" (says the catalogue of 1844-45) "are thus furnished for most important practical observation and study. Students have an opportunity of visiting *all the cases*, of observing and learning the symptoms and treatment of each case, and particularly of the exploration of the body for the PHYSICAL SIGNS of disease by *palpation, auscultation, and percussion.*"

During the whole of this period, and indeed up to the appointment of Dr. G. C. Shattuck in 1855, there was no separate

examination in clinical medicine. The clinical aspect of medicine was not sharply distinguished from the systematic study of diseases by means of books and lectures, and Dr. Jacob Bigelow united the professorships of *Materia Medica* and Clinical Medicine from 1847 to 1855. In the catalogue the sentences describing the clinical side of the teaching of medicine remain unchanged. But with the beginning of Dr. Shattuck's teaching "the subjects formerly in charge of the Hersey Professor of Theory and Practice are now divided among the professors, Professors Ware (theory and practice), Shattuck (clinical medicine), and J. B. S. Jackson (pathological anatomy)."

The teaching now consisted of "lectures, recitations, and examinations" held by Dr. Shattuck at the Medical School, and of "*medical visits*" at "*the hospital*" (*i.e.*, the Massachusetts General Hospital). These medical visits apparently constituted what we should call the clinical part of the teaching. They occurred "twice a week during the winter months, and four times a week during the summer term. Students have an opportunity of practising physical exploration and of *learning the uses of chemical analysis and of the microscope in the study and treatment of disease*," presumably for the first time in the history of the School.*

From some of those who attended these visits it is understood that there were the same difficulties then as now in the acquisition of medical knowledge from ward visits. The number of students was too great and the amount of time too small to make it possible for many of the students to get any first-hand acquaintance with the cases until toward the end of the term, when the numbers attending the visits had become greatly reduced. The faithful remnant of students might then learn a good deal.

*With the appointment of Dr. John Bacon as Professor of Chemistry in 1857 began the teaching of *medical chemistry* proper, although the actual instruction in this branch was given chiefly by Dr. James C. White. Systematic urinary examination was first taught by Dr. White at the Massachusetts General Hospital in 1857 as a portion of the course in clinical medicine.

Examinations were still wholly oral, and placed at the end of the student's three years of "study under the direction of a regular practitioner of medicine." Two courses of lectures (eight months) with each professor were required, but there is no indication of any grading or progress in the studies from term to term. A separate (oral) examination in clinical medicine, lasting, it is said, twenty minutes, was given for the first time in 1856-57; and this system of examination continued until 1871.

The first mention of clinical lectures given at the hospital is in 1859, when Dr. Henry I. Bowditch became Jackson Professor of Clinical Medicine, replacing Dr. G. C. Shattuck, who was transferred to the Hersey professorship of Theory and Practice. These clinical lectures were substantially the same as the method of teaching now called by that name. A patient was brought from the wards to the Jacob Bigelow lecture-room, at the northeast corner of the Massachusetts General Hospital (where the engineer's room now is), and his case demonstrated and explained to the students, some of whom found opportunity, especially at the close of the lecture, personally to examine the patient.

Instruction in the wards was continued, in the winter term by Dr. Bowditch, in the summer by Dr. J. B. S. Jackson, Dr. Gould, and other physicians, as well as at the dispensary. This is the first mention in the catalogue (1859-60) of any clinical teaching given by physicians not holding any stated position in the School. It is also the first mention of teaching at the Boston Dispensary or indeed at any institution other than "the hospital" (*i.e.*, the Massachusetts General). The Boston City Hospital was not opened until 1864. The teaching at the dispensary was in charge of "the assistants of the Professors of Clinical Medicine and Pathological Anatomy and other medical officers."

The catalogue first gives indication in 1857-58 that the work of the students was beginning to be arranged in groups of "studies

for the first year and studies for the second year," but until 1860 the "list of studies" includes nothing but books. In 1860 we find under the "Course of Study for the second year" not merely a list of books, but the general statement, "Clinical Observation at the Hospital and the Dispensary." Simultaneously we note that there is a decided falling off in the number of students whose names are linked in the catalogue with the name of some practising physician (the "instructor") to whom the student was rather loosely apprenticed. The system of apprenticeship continued until 1871, but more and more men dispensed with it, and spent their three years under the Harvard Medical School as sole instructor.

The Clinical Conference is first mentioned in the catalogue of 1862-63; that is, about the middle of Dr. Bowditch's term as Professor of Clinical Medicine. It appears, however, that an exercise more or less similar had previously been held by Dr. G. C. Shattuck at his rooms on Staniford street. Dr. Shattuck's exercises were not a stated part of the Medical School instruction, and so are not referred to in the catalogue; but, as the School was still a proprietary institution, the distinction between stated and private instruction was not sharp.

In 1865 with the accession of Dr. Calvin Ellis the catalogue gives considerably more space and detail to the Department of Clinical Medicine than in any previous year. We now begin to hear for the first time of clinical instruction at the Boston City Hospital, opened the year before, the Marine Hospital at Chelsea, and the Eye and Ear Infirmary.

Hitherto the Medical School had been conducted wholly by the eight teachers who composed the Faculty. At any rate, if there were any others who gave instruction, the catalogue gives no hint of their existence. But in 1865 we hear of ten professors and nine assistants, though not all of the latter are named.

The beginning of the provision for separate instruction in those

departments of medicine now known as "the specialties" is seen in the same year — 1865 ; and the name of Brown-Sequard appears as Professor of the Physiology and Pathology of the Nervous System.

Next year (1866-67) the number of teachers is increased to over twenty, including fourteen professors, two assistants, and "several" instructors. The amount of instruction in clinical medicine appears to be nine hours a week from November to March. This instruction consisted of two clinical lectures, one clinical conference, and six medical visits (two at the Massachusetts General Hospital, two at the Boston Dispensary, one at the Marine Hospital, and one at the Boston City Hospital). In addition we note that special instruction is given in hygiene, ophthalmology, dermatology, syphilis, and psychological medicine. The first mention of the stethoscope, ophthalmoscope, and laryngoscope occurs in the catalogue of 1868-69, although the stethoscope had already been in use for over thirty years. Next year (1870) the first mention of the microscope occurs.

In 1868-69 Dr. Bowditch retired, and Dr. Ellis took the Jackson professorship.

In 1871, with the accession of President Eliot, there occurred the most important event in the history of the School — its reorganization and incorporation as an integral part of Harvard University. Since 1810 the connection of the School with Harvard had been nominal rather than real. It had been a proprietary institution, managed by its own Faculty, who collected fees from the students and divided the proceeds in lieu of salaries at the end of each year. The appointments were made by the Medical Faculty ; and Harvard University had little, if any, control over its management. The instruction consisted of two courses of lectures of four months each, while the rest of the students' work was supposed to be supervised by the extra-mural instructors to whom they were loosely appren-

ticed for three years. Whether this apprenticeship amounted to anything as instruction or not depended upon the habits and inclinations of individual "instructors." It might be of great value. It might be practically valueless. Some students saw many cases of disease, some saw none at all. It has been mentioned that until 1871 examinations occurred only at the end of the whole course, that they were wholly oral, and that twenty minutes was the time allotted to clinical medicine, as to each of the other main branches.

In 1871 the third-year graded course was adopted, the apprenticeship system was abolished, written examinations were established and arranged to come at the end of each year, salaries and tuition fees were fixed, and President Eliot began to preside at all Faculty meetings.

There is no evidence, however, of any radical changes in the methods of teaching clinical medicine. "Visits at the hospitals, practical instruction on cases, and auscultation and percussion" are the methods as described in the catalogue. "The Clinical Conference affords an opportunity for more thorough preparation of cases, more time being allowed for their study. The full written report of a case is read by the student who has examined it. It is afterwards criticised by the class, by the Professor of Clinical Medicine and other teachers." From this time on there is no development in this exercise, which has been continued without essential change for over thirty years.

In 1881 Dr. Ellis' illness forced him to retire, and pending the appointment of a new Jackson Professor his duties were divided between Dr. Francis Minot (Professor of Theory and Practice) and Dr. R. T. Edes (Professor of Therapeutics). This continued until 1884, when Dr. Edes became Jackson Professor and Dr. E. N. Whittier assistant professor, Dr. F. C. Shattuck was transferred to the Department of Theory and Practice, while Drs. Cutler and

Gannett and, in 1885, Dr. Vickery, became assistants, bringing the teaching force up to six.

Next year Dr. George B. Shattuck was made instructor in clinical medicine; but after 1888 his name is not found in the catalogues, except in connection with the medical ward visits, of which some further account will be given below.

In 1889-90 Dr. F. C. Shattuck succeeded to the Jackson professorship, which had been vacant since the resignation of Dr. Edes in 1886.

Under Professor Shattuck, in 1889, served :

Dr. A. L. Mason, Instructor and next year Assistant Professor.

Dr. W. W. Gannett, Instructor.

Dr. G. M. Garland, Instructor.

Dr. C. F. Withington, Assistant.

Dr. H. F. Vickery, Assistant.

In 1892 Drs. Garland and Withington retired, and Drs. Henry Jackson, Vincent Y. Bowditch, and Augustus S. Knight became assistants, bringing the total teaching force up to seven and next year to eight (with the appointment of Dr. George G. Sears). One more assistant (Dr. John L. Morse) was added in 1897-98, after which there were no more changes until 1900.

In 1900 the Department consisted of :

The Jackson Professor, Dr. F. C. Shattuck; five instructors (Drs. McCollom, Withington, Vickery, Jackson, and Sears); six assistants (Drs. Prescott, Ames, Bartol, J. M. Jackson, Cabot, and Smith).

Since then the only noteworthy changes have been the promotion of Dr. Sears to be Assistant Professor of Clinical Medicine, of Dr. McCollom to be Assistant Professor of Contagious Diseases, and the appointment of Dr. E. A. Locke as assistant, replacing Dr. John L. Ames.

During the years in which the quantitative increase took place

there were changes also in the quality of teaching, of which mention must now be made.

THE EVOLUTION OF TEACHING METHODS IN THE DEPARTMENT.

The desire to get the student into personal contact with cases of disease, in order that he may learn to recognize their symptoms and signs and may watch their development from day to day, is the source of all the various methods of teaching in use in the Department. To attain this end, clinical lectures, ward visits, personal instruction in auscultation and percussion, and the clinical conference were the only methods in use up to 1895. These time-honored methods have been used ever since with very slight modifications, but others have been added.

1. The clinical lecture is to-day very much what it has been for the last fifty years, except that since 1901 Dr. Shattuck has allowed groups of students to examine patients under the supervision of Dr. W. H. Smith while the lecture is going on. These students lose a part of the lecture, but gain some practice in physical diagnosis.

2. Ward visits formed part of the instruction from 1835 until 1902, when they were discontinued. The method of instruction has been essentially the same during these seventy years. It grew in favor up to about 1880 or thereabouts, when visits were made at three hospitals by eighteen different physicians in company with sections of students. From this maximum, which was sustained for some years, the "medical visits" have gradually fallen off. They were abandoned at the Massachusetts General Hospital in 1897, continued at the Boston City Hospital until 1902, when they ceased altogether. During the current year visits have begun again at the Boston City Hospital.

3. The instruction in auscultation and percussion given by the

assistants in the Department to small sections of students has continued without much change from 1872, when Dr. F. I. Knight began to teach it, until the present day. The number of instructors has been increased to five, and the teaching extended to cover the rest of the physical examination of the body (exclusive of microscopic and chemical diagnosis); but the methods of work are essentially the same.

4. The Clinical Conference represented the careful study of one case by each student in the course of the year, but the need for more opportunities of this sort led to the establishment in 1895 of a new requirement for the degree of M.D. The student must not only have passed his examinations and written his Clinical Conference, but

5. It was also required (1895-1902) that four dispensary cases be taken by each student, who watched them (at the homes, under the supervision of Dr. Henry Jackson) and wrote brief reports upon them. This gave each student a chance to see something of private practice — a most important feature in medical education, and one which since 1871 had been entirely lacking. It was most valuable for the students, but the administrative duties connected with it proved so cumbersome and onerous that in 1902 it was replaced by the system of

6. Required out-patient work, one month for every student, in the clinic of some teacher in the School, but not necessarily under a member of the Department of Clinical Medicine. The cases seen by each student, the number of histories, physical examinations, chemical and microscopic analyses made by each student as part of the study of a case, is thus very much greater than under the system of dispensary cases seen in their own homes. But the opportunities for following cases from day to day and for learning to deal with the family are not as good; and, unless he secures a hospital appointment, the graduate is still very

inadequately instructed in these branches of medicine when he takes up practice.

The examination in clinical medicine (after the twenty minutes' oral test was dropped as insufficient in 1872) consisted of a series of twenty written questions, not materially different from those given in theory and practice. This was continued until 1876, and was supplemented during that period by bedside examinations.

In 1876 these practical bedside examinations were dropped (and never resumed); and the written questions were replaced by a series of detailed histories of actual cases, from which the student was to work out a diagnosis, prognosis, and treatment. This system has continued up to the present day; but at present it counts for only sixty per cent of the mark, while twenty per cent is represented by the Clinical Conference paper and twenty per cent by the medical out-patient work, so that two-fifths of the examination is practical.

Instruction for graduates by the Department has never been taken very seriously. The head of the Department has never taken part in it, and the instruction given by the subordinates has been irregular and unsystematic. The first announcement of graduate instruction was in 1872, when Dr. F. I. Knight offered a course in auscultation, percussion, and laryngoscopy. This was continued until Dr. Knight ceased to teach auscultation and percussion in 1879, and represented all the graduate instruction in this Department up to this date. Then there was for ten years no instruction for graduates whatever.

In 1889, when Dr. F. C. Shattuck became Jackson Professor, there appears in the catalogue the first announcement of courses for graduates since Dr. Knight ceased to teach in this Department. Four courses were offered in 1889, two of eight weeks each in clinical medicine and two in diseases of the digestive organs. Next year two more courses in physical diagnosis were added. In

1891-92 there are eight courses announced, consisting of from eight to twenty-four exercises and conducted at the Massachusetts General Hospital, the Boston City Hospital, and the Boston Dispensary.

In 1892 there were but four courses, in 1895 but three, in 1899 but two courses of one month each ; and at this low ebb the graduate instruction continued until the present year, when the number rises again and reaches eight courses, the largest number since 1891.

Thus far numbers and methods have been dealt with, not personalities. It remains to sketch as well as possible the characteristics of the more important teachers in the Department of Clinical Medicine. Leaving out those still living, those whose term of office was very brief, and those who merged clinical medicine with theory and practice, we have left but two concerning whose personality as teachers it has been possible to learn anything — Dr. Henry I. Bowditch and Dr. Calvin Ellis.

These men are interesting in their contrasts as well as in their likeness. Both were conscientious and faithful, and fulfilled their function as teachers by thoroughness and painstaking drill rather than by brilliancy or eloquence. There was nothing of Methodistical fervor nor of literary polish in their lectures. So far, they were alike. But one of Dr. Bowditch's most salient characteristics was his contagious enthusiasm ; while Dr. Ellis was quiet, composed, not easily roused to outbursts of any kind. Dr. Bowditch not infrequently enlivened his lectures with snatches of kindly humor. Dr. Ellis was earnest, but never humorous. Dr. Bowditch had many interests. Dr. Ellis had one. Dr. Bowditch's name is quoted as often in connection with anti-slavery agitation as with medicine ; and medicine easily associated itself in his activities with public work, like the Sanitary Commission or the Massachusetts Board of Health. Dr. Ellis' whole energy was

concentrated in one direction. He shunned anything like publicity, and even private practice had less interest than teaching for him. Teaching was his one hobby, and he would have been glad to give it his undivided attention. Dr. Bowditch was a man who, among his other activities, found time very ably to fill the Chair of Clinical Medicine.

As we look back upon the personalities and the methods which governed the teaching of the years between 1860 and 1885, we see that there were laid then the foundations for all that has been developed since. Clinical methods, first-hand contact of student with patient, was their ideal as well as ours; but the impression cannot be avoided that the personality of the teacher counted for more then than it does now. Partly because the number of instructors and assistants has been so largely increased, partly because we have more confidence in the power of the individual student to get his knowledge directly from the patient without the mediation of book or teacher, the domination of a single powerful personality over the students' ideas of medicine grows less and less. That there is both gain and loss in this change there can be no doubt. The modern teacher of medicine reverences the facts so much that he is afraid of interposing his personality between them and his pupils, and so draws himself more and more into the background. This is as it should be, provided the teacher does not forget that facts mean nothing, and that it is his business to see to it that the student knows what to do with his facts when he has gathered the crude mass. In the interpretation and application of data personality is as important as ever; hence the great teacher of medicine, in the future as in the past, will be first of all a great man.



THE DEPARTMENT OF PHYSIOLOGY.

1866.

In investigating the functions of the various organs of the animal body, students of the subject naturally at first contented themselves with inferences drawn from their anatomical structure. Hence the union of anatomy and physiology for purposes of instruction was a natural one, and in all the older medical schools we find that the two subjects were at first taught from the same chair. Thus, in the Harvard Medical School, the Parkman professorship of Anatomy and Physiology was established in 1847 and named in honor of George Parkman, who gave the land upon which the then Medical School was built. It was not till 1871 that the title was changed to Parkman professorship of Anatomy, a separate chair being created at that time for the teaching of physiology. From 1847 to 1882 the Parkman professorship was held by Dr. O. W. Holmes who until 1865 was solely responsible for the instruction in physiology. At that time Dr. Josiah Stickney Lombard was appointed lecturer in physiology, a title which, a year later, he exchanged for that of assistant professor. This office he held till 1870 when he was succeeded by Dr. William Thompson Lusk who, under the title of lecturer, gave instruction in physiology during the year 1870-71.

With regard to the amount and character of the instruction given during this period it is difficult to speak with precision. The announcements of the School are couched in very general terms, and the personal recollections of that generation of students are naturally, after the lapse of thirty-five to forty years, quite vague and discordant. Thus statements as to the number of lectures on physiology delivered by Dr. Holmes vary from three or four to twenty. A partial explanation of this discrepancy may be found

in the fact that physiological phenomena were not infrequently described in connection with structural details. Thus the first five lectures of the anatomical course were mainly devoted to a description of the physical and chemical properties of the elementary tissues of the body such as is usually to be found in text-books of physiology.

Few of Dr. Holmes' lectures were demonstrative in their character, but some of those who attended them can recollect witnessing a demonstration of the lacteals in an animal killed during the absorption of fat and a few simple experiments in artificial digestion. There is, moreover, still preserved in the physiological laboratory an apparatus made by Dr. Holmes himself for showing that negative after-images have colors complementary to those thrown upon the retina. It consists of a disc, having three colored sectors for which white sectors can be substituted by turning the disc through an angle of sixty degrees. Dr. Holmes' lectures on physiology during the winter course were supplemented during the first three months of the summer course by recitations held twice a week. Dalton's Human Physiology seems to have been the text-book used in these recitations.

Dr. Lombard's instruction appears from the catalogues of the period to have been confined to the summer term, recitations having been held twice a week for three months with one lecture a week in the month of May. No attempt was made to cover the whole ground of physiology, but selected subjects, such as glyco-genesis, the circulation of the blood, and respiration were treated with considerable detail, and the demonstrative method of instruction was freely used. During his connection with the School Dr. Lombard seems to have done a certain amount of original research on the patellar reflex, the temperature of the head, and other work; but no laboratory to which students had access was established.

According to the Medical School catalogue of 1870-71 Dr. Lusk's

instruction was given in three lectures a week during the winter lecture term and in recitations during the summer term. Of the character of this instruction it is possible to speak with some accuracy for his son, Professor Graham Lusk, of New York, has kindly furnished a copy of his father's memorandum of experiments and demonstrations made in connection with his lecture course. From this memorandum it appears that thirty-five out of a total of forty-three lectures were thus illustrated, and that the whole subject of physiology must have been quite well covered.

During the period we are considering a very important, though temporary, addition to the teaching force in physiology was effected by the appointment in 1864 of Dr. Charles Edouard Brown-Séquard as Professor of the Physiology and Pathology of the Nervous System. This brilliant investigator held office in the School for three years, and according to the School catalogue for 1866-67 lectured twice a week during the winter term of four months. Those who were privileged to listen to him will not readily forget the enthusiasm which he awakened in his hearers for medicine as an experimental science. It is interesting to note how far the physiology thus taught was in advance of the then accepted views. Thus, eighteen years before the publication of the well-known work of Goldscheider on the specific energy of the temperature-perceiving nerve terminations in the skin, we find Brown-Séquard teaching that the sensibility of the skin to cold and to heat was probably dependent upon two separate sets of nerve terminations.

Another course of instruction, which must be mentioned in this connection, was that of Dr. Robert Amory who in 1870-71 lectured twice a week on the physiological action of drugs on man and the lower animals. In this course, which was extensively illustrated by experiments on animals, was set forth the physiological action of ether, chloroform, chloral, nitrous oxide, the bromides and

cyanides, belladonna, aconite, veratrum viride, iodide of potassium, caffen, thein.

It should also be noted that medical students of this period had access to the lectures on comparative anatomy and physiology delivered in Cambridge by Professor Jeffries Wyman. Indeed it was not uncommon for students of the School to be at the same time special students of Dr. Wyman, and many sexagenarian physicians of this community still gratefully remember the enthusiasm with which they followed the instruction of this distinguished leader in biological science.

In 1871 the method of instruction in the Harvard Medical School underwent a radical change, the most important feature of which was the adoption of the so-called graded course. Until that time the students of the School were not classified according to the time spent in study, but every student was expected to select from the instruction offered such subjects as seemed to him best adapted to his needs. Thenceforth the students were divided into classes, and the subjects pertaining to an education in medicine were classified as first, second, third, and fourth year studies, an examination at the end of the year testing the student's fitness to advance from one class to the next. Under this arrangement physiology was classified as a first year study while, in recognition of its importance as an experimental science, it was accorded a position as an independent Department of the School and, by raising the roof of the North Grove street building, room was made for a fairly commodious physiological laboratory. This newly created Department was placed in charge of Dr. Henry Pickering Bowditch, who had graduated from the School in 1868 and had spent three years in Europe studying physiology in Paris, Bonn, Leipsic, and Munich. Dr. Bowditch, after serving five years as assistant professor, was in 1876 made Professor of Physiology, a title which in 1903 was changed to George Higginson Professor of Physiology, this

professorship having been founded in memory of their father by the children of George Higginson.

For the first six years instruction was given by the occupant of the new chair with such assistance as could be furnished by students, who volunteered for the work or whose fees were remitted as compensation for services rendered. In 1877 an Assistant in Physiology was for the first time appointed, Dr. George Minot Garland being chosen for the position which he held for four years. He was succeeded by Dr. Joseph Weatherhead Warren who served as assistant from 1881 to 1887, and as instructor from 1887 to 1891. Since that time more than twenty assistants and instructors have held office in the Physiological Department, but no officer of higher rank was added to the teaching force till 1892, when Professor William Henry Howell was called from the Chair of Physiology in the University of Michigan to assume the position of Associate Professor of Physiology at Harvard. The Harvard Medical School enjoyed but temporarily the advantage of Professor Howell's services, for in the following year he obeyed the summons of his Alma Mater to take charge of the Department of Physiology in the Johns Hopkins University. He was succeeded by Professor William Townsend Porter, of the St. Louis Medical College, who, after five years' service as assistant professor, was made Associate Professor of Physiology in 1898. In 1902 Dr. Walter Bradford Cannon, after two years' service as instructor, was appointed Assistant Professor of Physiology.

It has been the constant aim of all the officers of instruction in the Department of Physiology to develop and improve the methods of instruction and research to the fullest extent. In view of the great variety of subjects to be taught and of the diversity in the mental equipment of the students it was felt that all the recognized methods of instruction should be employed. Thus the didactic lecture, the text-book, the recitation, the laboratory experiment,

the demonstration, and the conference have all been in use. With regard to these various exercises the name is, in most cases, sufficiently indicative of their character, but as to the last on the list a few words of explanation may be desirable. The physiological conference was modelled upon the clinical conference which had long been an approved method of instruction in the Department of Clinical Medicine and which in turn had been more or less closely copied from a method employed by the celebrated French clinical teacher Louis.

In this exercise, which usually lasts half an hour, a student reads a short essay on some previously announced special question in physiology. The reader is allowed about ten minutes to present his evidence and draw his conclusions. The subject is then thrown open for discussion by the class and the students are encouraged to question and criticise the reader. Finally the teachers in the Department contribute their views to the elucidation of the subject. The exercise is found to be particularly valuable in training students to weigh evidence in fields of research where investigation has not yet led to certain results.

With the establishment of the physiological laboratory in 1871 an opportunity for the systematic study of physiological problems was for the first time afforded in this community. That workers were ready to avail themselves of this opportunity was proved by the fact that in 1879 it was possible to issue a volume of papers consisting of eighteen collected reprints from various scientific journals and representing work done in the physiological laboratory. In 1886 a second volume containing twenty-two papers was issued. Since that date the productive activity of the laboratory has been set forth in the annual reports of the dean of the Medical School.

From 1892 to 1896 a small number of physiological experiments were made by the students themselves. Excepting the year,

1892-93, these experiments were entirely chemical, and in 1896 they were transferred to Professor Hills, of the Department of Chemistry. Their place was taken by section work in other fields, such as the circulation and the nervous system, under the direction of Professor Porter. In 1896 each student spent two afternoons at such experiments. In 1897 and 1898 this was increased until each student worked from two to three hours on twelve afternoons. The class was, however, divided into sections, and the experimentation could not possibly be co-ordinated with the didactic instruction. Moreover, since physiology and anatomy were both taught throughout the first year of the curriculum, the physiological teaching could not be properly co-ordinated with the teaching of anatomy. Indeed, the function of organs was often expounded by the physiologist before the student was acquainted with their anatomy. Finally, as anatomy and physiology were pursued at the same time, the student suffered from a divided mind. These considerations led Professor Porter to urge a system of teaching distinguished by concentration and sequence. Under this system the student gives to anatomy and histology his entire time during the first half of his first year of medical study, and during the second half he gives his entire time to physiology and physiological chemistry. Three advantages are thereby gained: (1) The student is grounded in structure before he considers function; (2) he serves but one master at a time; (3) experimentation and didactic instruction can be successfully co-ordinated.

In 1899 Professor Bowditch withdrew from the greater part of his work, and the responsibility for the first-year instruction was given to Professor Porter. The principal changes introduced by the latter were a new method of teaching physiology, the provision of apparatus suitable for the laboratory teaching of physiology, and the planning of a building for laboratory teaching and research.

The new method of teaching physiology provides that the didactic instruction in each field shall be closely preceded by related experiments performed by the student himself. In the old method the subject was developed by a series of lectures illustrated by demonstrations and, where possible, by a relatively small number of experiments by the student himself. In the new method, the classical experiments of physiology, arranged in the most instructive sequence, are performed by the student and afterward discussed by the lecturer, who then collates the student's experiments and observations with those of other observers. In the old method the stress is upon didactic teaching. In the new, the stress is upon observation.

In 1900 two hundred and twenty students worked in the physiological laboratory daily (except Saturday) during four months. Experimentation on such a scale requires many thousand pieces of apparatus, the cost of which would have been prohibitory. This vital difficulty was overcome by the invention of many new instruments and the re-designing of others to secure greater simplicity without the sacrifice of accuracy. Even simple apparatus cannot be made cheaply except in lots of from one hundred to one thousand of each instrument. Thus, the making of these instruments for the Harvard Medical School leaves inevitably a surplus. This surplus is placed at the disposal of other universities at prices far below the commercial values. The Harvard physiological apparatus has been sent, in larger or smaller quantities, to more than one hundred and sixty laboratories in the United States, and to more than fifty laboratories in foreign countries, including Syria, Russia, Japan, and Australia.

Certain experiments in physiology are laborious and time-consuming. To meet this condition the students are divided into groups of eight. An experiment on metabolism, for instance, is assigned to an entire group, two members of which are the subjects

of the experiment, while the remaining members divide with them the labor of the analyses. The results of such experiments are reported to the whole class by the representatives of the groups. With the group system in mind, the new physiological building was designed. Each student room contains three rows of four desks each, accommodating three groups of eight students together with the necessary equipment. A library is also provided, with the literature in physiology at hand, and the provision for research and for the care of the experimental animals is ample.

THE DEPARTMENT OF DERMATOLOGY.

1871.

It is believed that the first special instruction having any cutaneous relations was given in the School as early as 1858, when Dr. James C. White gave some lectures on parasites by invitation of the Professor of Clinical Medicine. In 1861 Dr. White gave a course of lectures on skin diseases to the class, and this was repeated from year to year. Dr. B. Joy Jeffries gave similar instruction later, for a year or two, at Professor Shattuck's request.

The first instruction authorized by the Faculty, however, was given in 1864, when Dr. White gave a course of "University Lectures" on skin diseases, and in 1867 Dr. White was appointed lecturer in dermatology. In 1871 the professorship of Dermatology was created, the first to be established by any medical school in this country, and Dr. White was appointed professor, a position which he occupied until 1902.

In these earlier years the clinical resources for teaching dermatology were naturally meager. In 1860 Drs. White and Jeffries opened a dispensary for skin diseases in Eliot street, which continued until 1863 when Dr. White was appointed physician to out-patients at the Boston Dispensary. Here there was considerable material for dermatological instruction, which was made the most of. In 1865 Dr. White was appointed physician to out-patients at the Massachusetts General Hospital, this position at that time including all diseases except those of a surgical nature. In 1870 an Out-patient Department for the treatment of skin diseases was established, which, under Dr. White's able and faithful administration, soon began to afford an abundant supply of material for teaching and for investigation. In 1871 Dr. White, as has been said, was appointed Professor of Dermatology. He immediately instituted

his systematic course of lectures and demonstrations, which were repeated for many years. It consisted of two weekly exercises, or rather one exercise spread over two days. This course included a weekly afternoon lecture throughout the year, illustrated by photographs, wax models, and specimens in which was covered practically the whole field of dermatology. This lecture was given at the Medical School, and the following morning, at ten o'clock, the lecture of the preceding day was illustrated, as far as possible, by patients at the hospital, other interesting cases that might happen to be available being shown at the same time. This course was continued, practically unchanged, during the whole thirty-one years of Dr. White's professorship.

In 1871 Drs. Edward Wigglesworth and Francis B. Greenough were appointed lecturers on syphilis. Dr. Wigglesworth appears to have held this position but one year. Dr. Greenough, however, was appointed yearly until 1875, when he and Dr. Wigglesworth were made clinical instructors in syphilis, the instruction being given at the Marine Hospital and the Boston Dispensary. Dr. Greenough held this lectureship from 1875 to 1895, Dr. Wigglesworth from 1875 to 1881. In 1872 graduate courses in dermatology and in syphilis were offered for the first time. The graduate course in dermatology was offered by Dr. White at the Massachusetts General Hospital, and consisted of two weekly exercises, with an opportunity for examining all the cases presenting themselves at the Out-patient Department. The graduate course in syphilis was given at the Boston Dispensary and at the Marine Hospital.

In 1880 an optional fourth year was instituted in which Dr. White gave courses consisting of three exercises a week at the Massachusetts General Hospital, and Drs. Greenough and Wigglesworth offered exercises in syphilis once a week in the Marine Hospital and at the Boston Dispensary. In 1881 Dr. Wigglesworth retired, and the instruction was carried on by

Dr. Greenough alone until the following year, 1882, when Dr. Abner Post was appointed clinical instructor in syphilis, together with Dr. Greenough. Dr. Post gave exercises to the third class once a week for a half year on the practical diagnosis and treatment of syphilis, and Dr. Greenough gave clinical exercises two hours a week throughout the year to the fourth class, all of these exercises being at the Boston Dispensary. In the catalogue for the year 1889 there appears for the first time the name of Dr. George H. Tilden, who had been appointed special instructor in dermatology and syphilis. He remained in the School for two years, giving instruction to the fourth year twice a week for three months at the Boston City Hospital.

In 1892 the fourth year became obligatory, and dermatology was included under the electives. The course was still conducted by Dr. White, who gave two clinical exercises a week throughout the year at the Massachusetts General Hospital. It was always a popular course, as was Dr. Post's fourth year elective in syphilis.

In the summer of 1893-94, summer instruction in cutaneous diseases was given for the first time at the Massachusetts General Hospital by Dr. John T. Bowen, during July and August. Instruction in these summer courses was, and has remained, purely clinical and informal in character, and has attracted a goodly number of students.

In 1896 Dr. Greenough retired, and Dr. Post was appointed instructor in syphilis. At this time Dr. Post gave the instruction in syphilis to the fourth year. Dr. Bowen in this same year was added to the Department as instructor in dermatology, assuming the instruction of the fourth year elective, hitherto conducted by Dr. White.

In 1898 Dr. Charles J. White was appointed Assistant in Dermatology. A special course in the histology of the skin was added

to the fourth year elective during this year, instruction being given at the Medical School by Drs. Bowen and C. J. White during some of the spring months.

In 1900-1 syphilis was merged with dermatology, the Department of Dermatology and Syphilis being created under the control of the Professor of Dermatology. The instruction continued the same as before, however, Dr. White giving his weekly didactic lecture to the third year, illustrated the following morning by patients at the hospital, while two clinical exercises a week, with an optional course in histology, were offered in the fourth year elective by Drs. Bowen and C. J. White. Dr. Post at this time was doing all the teaching in syphilis, offering to the fourth year didactic and clinical lectures once a week during the first half year, and clinical exercises in sections three times a week, also during the first half year.

In 1902 Dr. James C. White resigned the professorship of Dermatology, which he had held since 1871. Dr. White's services to the Medical School were attested by a vote of the Corporation, appointing him Professor of Dermatology Emeritus, because of their appreciation of the value of his services to the Medical School during more than thirty years of devotion to his work. The School is to be congratulated on retaining the services of Dr. White for so long a period. A pioneer in dermatology, he has contributed more to the upbuilding of the speciality and to the advancement of dermatological education than any individual in the country. He was also wise in counsel in the Faculty room, and a prominent factor in promoting the modern changes in the medical curriculum. Dr. Bowen was promoted to be the head of the Department of Dermatology and Syphilis, with the title of Assistant Professor of Dermatology. Dr. C. J. White was appointed instructor in dermatology. The courses were not altered during this year, Dr. Bowen giving the lectures and clinical

exercises to the third class previously given by Dr. James C. White, and Dr. C. J. White assuming the fourth year instruction in dermatology. Dr. C. M. Smith was added to the Department as Assistant in Syphilis, aiding Dr. Post in the section work of the fourth year.

In the autumn of 1903, great facilities were added to the dermatological teaching by the opening of the new Out-patient Department of the Massachusetts General Hospital, and of the ward for skin diseases. The new Out-patient Department affords much larger space and rooms for examination of patients and for class work; and on the same floor with the skin Out-patient Department is an amphitheater with abundant north light and with seats especially arranged so that patients may pass in front of each of the students for examination.

The ward for skin diseases was the generous gift of Dr. Charles G. Weld, and contains sixteen beds for skin diseases, in separate single and double rooms. It has been possible in this way to show to the class many examples of cutaneous disease that it would be difficult or impossible to demonstrate otherwise, especially cases confined to their beds, and the class of bullous diseases.

In 1904, in accordance with the general policy of the Faculty, the third year course, that had remained the same since 1871, was somewhat modified. The number of didactic lectures, hitherto occurring once a week through the year and numbering thirty-two, was reduced to eight, given during October and November. No attempt, therefore, could be made to cover the whole domain of dermatology, as had previously been done, but the eight lectures were made to serve as an introduction to the subject, covering some of the most important points. These lectures, as well as the weekly clinic in an amphitheater of the Massachusetts General Hospital, were given by Dr. Bowen, who carried on clinical instruction in small sections during February and March in addition. It

will be noted that this was the first appearance in dermatology of the division of the large classes into smaller sections in which more individual instruction could be given. This plan has proved advantageous to the students, and will undoubtedly be adhered to. Probably there is no other branch of medicine in which there is so much opportunity for training the powers of direct observation as in dermatology.

The year 1905-06 has seen further changes in the dermatological instruction, because of the revision of the fourth year by which all the subjects of this year have become elective, and are so arranged that the student passes his whole morning, or day, in working in one Department. A further force of assistants was rendered necessary, and Drs. Harvey P. Towle and Frederick S. Burns, previously assistants in the Dermatological Department of the Massachusetts General Hospital, were appointed Assistants in Dermatology.

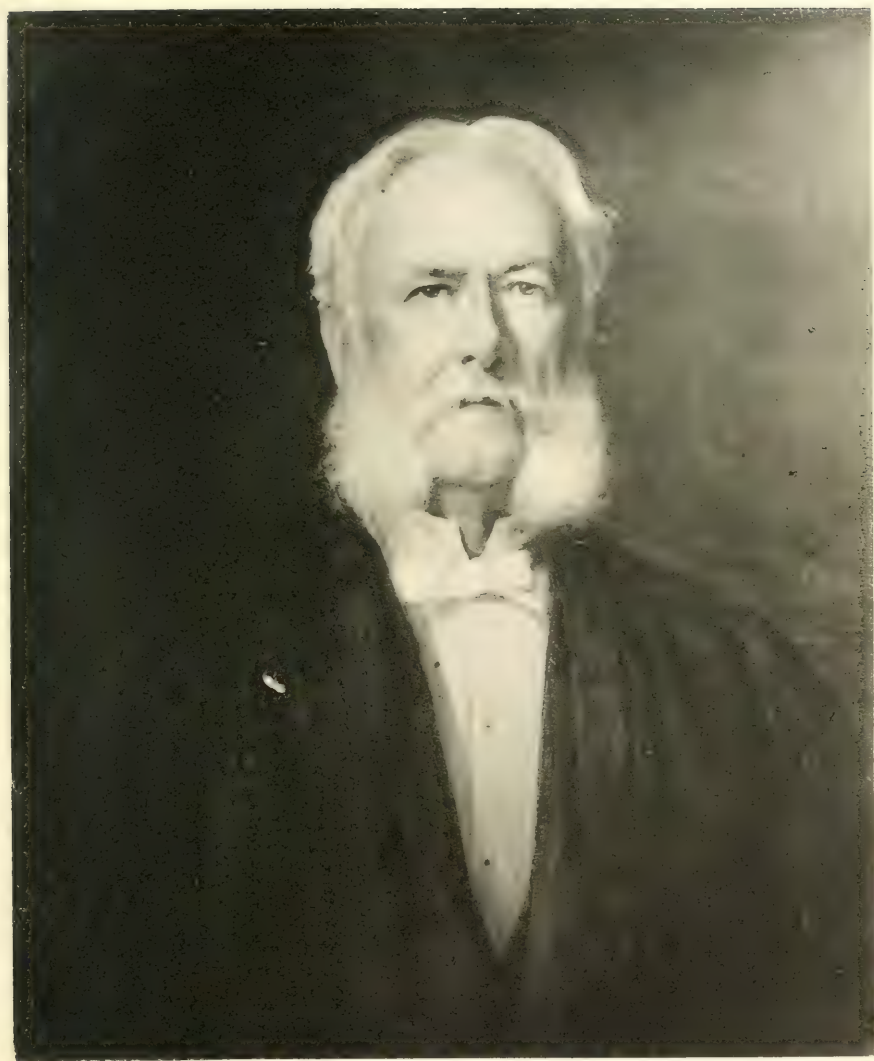
The present instruction given in the Dermatological Department of the Harvard Medical School may be briefly described as follows: In the third year, eight introductory didactic lectures, illustrated by drawings, photographs, and models, are given during October and November at the Medical School by Dr. Bowen. For the same class, the weekly morning clinic throughout the year is held at the Massachusetts General Hospital by Dr. Bowen in the upper amphitheater. A dozen to twenty selected cases are examined by the instructor in the presence of the students, and later by the students themselves. These cases are taken from the out-patient clinic, or brought up from the ward for skin diseases. When it is desired to illustrate some special subject, larger numbers of patients are brought into requisition. In addition to this, the class is divided into sections which meet at the Massachusetts General Hospital twice a week during the second half year, under the clinical instruction of Drs. Towle and Burns. The third year instruction in

syphilis is given by Drs. Post and Smith. Dr. Post offers eight didactic lectures during December and January at the Medical School. These are supplemented by clinical exercises in sections twice a week during the second half year by Drs. Post and Smith.

The fourth year elective is under the special charge of Dr. C. J. White, although the entire Department unites in the instruction. The students are divided into squads, each squad spending every morning for two months in the skin Out-patient Department and in the ward for skin diseases, where they may act as house officers, and where certain cases are assigned to them for study. There is also instruction in the microscopical examination of cutaneous lesions and pathological products.

There are two kinds of courses offered for graduates. One—in which each course lasts for eight weeks—comprises twenty-four exercises given on Mondays and Thursdays at the Massachusetts General Hospital. The instruction is continuous from October to June. A second and more elaborate one, which has proved unexpectedly popular, offers three hours daily of work and instruction for two months in the Out-patient Department and skin ward of the Massachusetts General Hospital, and is similar to the elective fourth year course.

Summer courses are offered by members of the Department during June, July, August, and September. Courses in dermatology are given at the Massachusetts General Hospital and in syphilis at the Boston Dispensary. During the month of August a course exclusively for women is offered by Dr. Burns. These summer courses are similar in character to the elective fourth year and to the advanced course for graduates.



THE DEPARTMENT OF OPHTHALMOLOGY.

1871.

The first attempt to give any special instruction in ophthalmology in the Harvard Medical School was in October, 1869, when the Faculty nominated Dr. Henry W. Williams and Dr. Gustavus Hay as University lecturers in ophthalmology, and during the succeeding winter and spring a few lectures were delivered at the Medical School by each of these gentlemen. The following year Dr. Williams and Dr. Hasket Derby were appointed University lecturers in ophthalmology, and their appointments were renewed annually till 1871. During these years the lectures given were few in number and treated of fragments only of the general subject, and the audiences, never large, included but few of the medical students.

In October, 1871, Dr. H. W. Williams was made Professor of Ophthalmology, and the catalogue announced a complete course on the diseases of the eye. Lectures were given once a week during the school year at the Boston City Hospital, and clinical instruction once a week for six months. But no examination was held in ophthalmology, and attendance by the students was irregular and scanty. This condition lasted till the school year of 1880-1881, when the advisory fourth year was established. Then ophthalmology was made an elective for the fourth year students, with an examination at the end of the year, and clinical instruction was offered twice a week for six months. Few students, however, continued in the School for the fourth year and fewer still elected ophthalmology. In April, 1881, Dr. O. F. Wadsworth was appointed clinical instructor in ophthalmology and the following year a voluntary course in ophthalmology, twice a week for four

months, was added to the instruction already offered. This course was attended by some half dozen students.

In 1888-1889 ophthalmology was made an elective for students of the third class also, and was chosen by a small number.

In May, 1891, Dr. Williams resigned, and in June Dr. O. F. Wadsworth was appointed professor. In October, 1891, Dr. F. E. Cheney was made clinical instructor in ophthalmology. During this year the instruction was almost entirely clinical. In May, 1892, Dr. Myles Standish was appointed assistant in ophthalmology.

For the three following years lectures were given at the Medical School and clinical instruction at the Boston City Hospital, Massachusetts General Hospital, and the Massachusetts Charitable Eye and Ear Infirmary. An average of about six students chose ophthalmology as an elective yearly.

With the fall of 1895 came a decided change. Up to this time ophthalmology had been only an elective study. But now, with the required fourth year established, it became a required study for the fourth class, with an examination at the end of the first term, while it could be taken as an elective for the second term. The instruction in the required course during the first term consisted of a lecture once a week — after a few years twice a week for the first half of the term — and fourteen to sixteen clinical exercises, in sections. The lecture course comprised a brief review of the anatomy and physiology of the eye, the rudiments of refraction, and such of the diseases of the eye and its appendages as could be understood without practical knowledge of ophthalmology. The clinical instruction was confined to the same range. The lectures were given by the professor, the clinical exercises conducted by the professor and assistants. The voluntary course in ophthalmology was abandoned and Dr. Cheney's title was changed to assistant. The elective course in the second term was given by the professor,

six hours a week, and comprised more advanced instruction, including ophthalmoscopy, and was mainly clinical. In 1903 half of the elective course was given by Dr. Edmund W. Clap.

In 1900 the examination in the required course, hitherto wholly written, was made partly clinical. The number of assistants was gradually increased to five to enable the clinical instruction to be given to smaller sections. In June, 1901, Dr. Cheney resigned, and Dr. Standish was made instructor. In September, 1903, Dr. Wadsworth resigned. The Department has since been conducted by Dr. Myles Standish, who was appointed assistant professor in 1904. The amount and character of the instruction has been much the same.

In the required course the lectures have been given by Dr. Standish, the clinical instruction by the assistants. In the elective course Dr. Standish and three of the assistants have each given instruction for one month.

In October, 1904, there was a rearrangement of studies in the third and fourth years; required ophthalmology was placed in the third year, the elective continuing in the fourth.



THE DEPARTMENT OF HYGIENE.

1871.

The first mention of hygiene in the catalogues of Harvard University occurs in that for the year 1869-70, in which, in the list of "Lecturers in the University Course on Literature," appears the name of George Derby, M.D., University lecturer on hygiene. In the catalogue of the Medical Department of that year, Dr. Derby does not appear as an instructor, and no mention is made of instruction. In the following year Dr. Derby's name appeared among the annual appointments in the Medical School as lecturer on hygiene. The only information furnished as to instruction is the following: "Lectures on hygiene, ophthalmology, laryngoscopy, otology, and the physiological action of drugs on man and the lower animals."

In the year 1871-72 Dr. Derby began service as Professor of Hygiene, and the catalogue of that year contained the following statement concerning instruction: "Hygiene. — A course of lectures on hygiene will be given."

In the following year the tense of the statement was changed: "Hygiene. — A course of lectures on hygiene is given." In addition, a course of study for graduates was announced; this to consist of lectures in the second term, for a fee of five dollars. These courses were continued until Dr. Derby's death, in 1874, the lectures being given on Tuesdays and Wednesdays, after May first.

After one year, during which the subject was not taught, Dr. Frank W. Draper was appointed lecturer, but the study was not given a place in the tabular view.

In the following year, however, it reappeared, the course consisting of lectures to the third year students, on Thursdays, after April fifteenth. Although so short a course can hardly have been a

severe tax on the time or strength of one instructor, the catalogue of the following year shows two lecturers on hygiene — Dr. Frank W. Draper and Dr. Charles F. Folsom. There was no increase in the amount of instruction, the lectures being given on Wednesdays, after April fifteenth, and, as before, to the third year class. This announcement was followed by Dr. Draper's transfer to the field of forensic medicine, leaving Dr. Folsom in charge of hygiene. The course was somewhat increased in extent, lectures being given to the third year students on Tuesdays in January, and on Wednesdays after April first. This arrangement lasted but one year, when Dr. Folsom's title was changed to "Lecturer on hygiene and mental diseases," and the course of instruction in hygiene was shortened to eight lectures.

In the following year Dr. Folsom's title was changed once more; this time to "Lecturer on mental diseases." In the catalogue of that year no teacher of hygiene appears among the list of those giving instruction, but the tabular view for the third class includes lectures on hygiene, to be given on Tuesdays in January, although in another place it is stated that the "course in hygiene consists of *eight* lectures;" but the name of the instructor is not given. In the next catalogue, although the subject is mentioned as being a part of both the three and four years' courses, it is not to be found under "Methods of Instruction," nor in the tabular view, nor under "Special Pathology and Therapeutics."

From this time until the appointment of Dr. Samuel H. Durgin as lecturer in hygiene, in 1882-83, no instruction was attempted. In the year mentioned Dr. Durgin offered a voluntary course of sixteen lectures and demonstrations to the first year students.

In the year 1885-86 the instruction was increased in amount. Dr. Charles Harrington was appointed instructor in hygiene, lecturing once a week to the first class, while Dr. Durgin transferred his instruction to the fourth year men, to whom were given, during

the months of February and March, sixteen lectures in the application of hygiene to practical municipal sanitation. These voluntary courses were supplemented in the year 1886-87 by a laboratory course to graduates, and in 1894-95 by an elective laboratory course for fourth year students, both courses being given by Dr. Harrington.

In 1897-98 hygiene became for the first time in the history of the Medical School a required study, and was given by Dr. Harrington to the fourth class during the second half-year. At the same time the students had the benefit of Dr. Durgin's long practical experience in municipal work, his lectures being continued, as previously, as a voluntary course. In the following year Dr. Harrington was promoted to be assistant Professor of Hygiene, and at the same time an anonymous friend contributed a sum of money sufficient for equipping the laboratory of hygiene with suitable desks and apparatus.

The new scheme of instruction in the Medical School, so far as it affected the course in hygiene, went into effect in the year 1903-04, when by reason of a transfer of the study to the schedule of the second year, a double course of lectures was required — one to the second class and one to the fourth class, since the latter had had no opportunity for instruction in the subject. It was necessary to repeat the double course for the same reason in the year 1904-05. In 1905-06 the instruction took its normal course and was given only to the second class, with the exception that especially qualified students were permitted to elect the laboratory course offered to fourth year students. In March, 1906, the professorship of Hygiene was revived, and Dr. Harrington was chosen to fill that chair.



THE DEPARTMENT OF HISTOLOGY AND EMBRYOLOGY.

1887.

The development of this Department is very recent. The germ of it is found in the instruction in anatomy as formerly given, and Dr. Oliver Wendell Holmes, who retired from the School in 1882, was accustomed to give more or less attention to histology and embryology in his lectures and demonstrations. He contrived a wooden frame to hold a microscope tube and a kerosene lamp for illumination, thus making an apparatus which could be passed around the class during the lecture, giving the students at least some view of microscopical structures. This apparatus served a useful purpose for many years, for Dr. Holmes considered the teaching of histology an important part of his course, and questions upon microscopic anatomy were not infrequently included in his examination papers.

The microscope, however, made but little headway as a scientific instrument in America, as compared with Europe. Its use in medical science was introduced by the young physicians who went abroad to study after the termination of our Civil War, most of whom returned with an appreciation of the value of the instrument to the physician. Under the influence of Dr. Calvin Ellis the use of the microscope by students was stimulated in this School, especially in connection with pathological work, and Dr. R. H. Fitz contributed very much to put the new laboratory work on a satisfactory basis. He was in charge of the laboratory until 1874 and gave instruction in both normal and pathological histology. In the meantime the growing need for laboratories resulted in extensive alterations in the attic of the old North Grove street building. These alterations included a microscope room. When, in 1873,

Dr. Fitz became Assistant Professor of Pathological Anatomy, Dr. Thomas Dwight was appointed instructor in histology. This step, which placed the teaching of histology in charge of its own instructor, may be considered the first toward the establishment of a new department. Dr. Dwight remained instructor in histology for nine years, and introduced actual practical work. His exercises consisted of a short lecture in the laboratory, after which prepared material was given out, from which the students cut and made their own specimens. During a part of this time Dr. Dwight gave also a short course on embryology, which was, however, entirely didactic and diagrammatic. After the resignation of Dr. Holmes in December, 1882, Dr. Dwight took up his work and became Professor of Anatomy at Commencement, 1883. In 1880, before the resignation of Dr. Holmes, Dr. Charles Sedgwick Minot was appointed lecturer in embryology. After Dr. Dwight's assumption of the work in anatomy a distinct course in histology and embryology was established as voluntary work when the then new building on Boylston street was occupied. This voluntary work was placed in charge of Dr. Minot and Dr. Henry P. Quincy, who had already been in charge of laboratory exercises in histology, and at this time received an appointment as instructor. In the new School building no distinct place for normal histology and embryology had been provided, an omission upon which Dr. Holmes commented in his address at the dedication of the new building. This difficulty was not overcome until ten years later, when the addition was made to the building by the gift of Dr. Sears. This addition took in the Departments of Pathology and Bacteriology and left the old laboratory for the use of histology and embryology. With this change the Department of Histology and Embryology may be said to have been definitely recognized and established. Dr. Minot became assistant professor in 1887, and professor in 1892; thus, at last, the Department became wholly independent.

When the new building was opened the equipment of the Department of Histology consisted of eighteen Hartnack microscopes and very little else. There were no instructors and no assistants. An annual appropriation of fifty dollars supported the Department.

From these modest beginnings the Department has steadily grown and now has a considerable library, some two hundred and fifty microscopes, a considerable variety of microtomes and other apparatus, and an important and very extensive collection of embryological preparations. The embryological collection is thought not to be surpassed anywhere in the world.

The aim of the teaching in the Department has always been to train the students in exact observation and reasoning, to make them as expert as possible in the use of the microscope, to accustom them to rely upon preparations rather than upon the text-book as a source of information, and also to meet practical requirements of medical education, providing for the students that acquaintance with the microscopic structure of the body and with the laws of development which is most likely to be of value to them in their subsequent studies. In addition to this the Department has steadily striven to promote scientific research, and to contribute something toward the increase of scientific knowledge. The list of scientific books and papers published by the officers of the laboratory is now a long one.

By the recent rearrangement of studies in the first two years of the School the time given to the work of this Department has been much lengthened. Half of each day during October, November, and December is devoted to the subject, and about ten half-days during January. A very close alliance between the work of gross anatomy and minute anatomy has been established through the direct, cordial, and highly-valued co-operation of Dr. Thomas Dwight. This alliance has resulted in a marked improvement in the laboratory work, and in great advantage to the students.

Lectures are given daily during October, and twice a week during the rest of the half-year. The remainder of the time is devoted to the laboratory work, which is considered of more value than purely didactic teaching. It has not been found practicable to give much training in the technic of section cutting, owing to the insufficient quarters of the laboratory, and its very crowded condition when occupied by a large class. When the new buildings are occupied the extent of the practical work in the laboratory will be greatly increased, and every student will be thoroughly disciplined in the making of preparations for himself, so that he will be rendered, to some extent at least, capable of independent work. At present, on the contrary, most of the specimens are given out cut and stained, to be mounted by the students, and preserved for their future use. Such specimens as are too rare to be thus used, and are too difficult to be prepared each year, are loaned all mounted to the student. While the method of work is scientific it is the effort of the Department to choose, so far as possible, human material, and to pay especial attention to such parts of the subject as shall be of the greatest value to the men in their subsequent practice. The men make careful drawings, and their labors are followed and criticised by the assistants. The drawing is found to be of the greatest benefit and is regarded as an absolutely indispensable factor in successful teaching. Weekly recitations are held. Examinations are wholly practical, and consist of the examination and identification of specimens, upon which questions are to be answered in writing or by drawings. One month of the work is occupied by embryology. For students and others who wish to pursue the subject further there are advanced elective courses for the fourth year.

THE DEPARTMENT OF LARYNGOLOGY.

1888.

Laryngoscopy, independently of the slight notice which it had received in the courses in medicine, was first taught as a special subject in 1866, when Dr. H. K. Oliver, one of the visiting physicians of the Massachusetts General Hospital, was made University lecturer in laryngoscopy. The lectures, supplemented by demonstrations of instruments and apparatus, were held in the Medical School building on North Grove street.

Dr. Oliver was lecturer in laryngoscopy until 1873 with the exception of 1870-71, for which year Dr. F. I. Knight was appointed. Instruction was not confined to lectures, as is seen from the announcement under clinical medicine that this includes a regular course of supplementary instruction in auscultation and percussion and in laryngoscopy, giving a thoroughly practical knowledge of these methods of exploration.

In 1872, while in Europe, Dr. Knight was made instructor in percussion, auscultation and laryngoscopy and, by the advice of Dr. Calvin Ellis, made preparations for establishing a special clinic for diseases of the throat and nose at the Massachusetts General Hospital on his return. This clinic, the first in New England to include laryngoscopy, was opened by Dr. Knight on his return in 1872 in a small room in the amphitheater building at the hospital. In common with this clinic a course in laryngoscopy was given, beginning in 1873-74 in the first half year, to the second class. Instruction was largely confined to the methods of examination with the laryngoscope and rhinoscope and nasal speculum, and diseased conditions received attention only incidentally. The class was divided into sections, and each section had exercises daily for two weeks, but there was no examination required.

The next year, and in subsequent years, a graduate course was offered which was at first given at eight o'clock in the morning. Examination of patients was made by the aid of the oxyhydrogen light. In 1879 percussion and auscultation were separated from laryngoscopy, and Dr. Knight's title became instructor in laryngoscopy. With the establishment of the voluntary fourth year in 1880 a course in laryngology was given to the fourth year class by Dr. Knight. This course at first consisted of three exercises a week for two months. The instruction was both clinical and systematic, and was followed by a written examination. In 1882 Dr. Knight was made assistant Professor of Laryngology, but there was no immediate change in the courses. With the opening of the new out-patient building the accommodation for the clinic and for instruction was much improved.

In 1888 Dr. Knight became clinical professor, and Dr. F. H. Hooper instructor in laryngology. Instruction to the second class consisted, as before, principally in practice in methods of examination. In the fourth class different diseases were shown, the students were drilled in the diagnosis and treatment of patients, and the whole subject was taught by lectures and demonstrations, followed by a written examination at the end of the year.

In 1892 Dr. Knight resigned and instruction in laryngology devolved upon Dr. Hooper. The same year Dr. Hooper died. These were serious losses to instruction in the School. Dr. Hooper had done much original work, especially in connection with the physiology of the larynx; he had introduced into this community the operation for the removal of adenoids under general anesthesia; he had made and modified several instruments, some of which are still in daily use; he kept himself constantly informed of everything of importance in the subject, and he applied that information in the most practical and often ingenious manner to make his teaching clear, accurate, and thorough.

After Dr. Hooper's death instruction in laryngology was again put under the Department of Clinical Medicine. Drs. T. A. De Blois, J. W. Farlow, and A. Coolidge, Jr., were appointed clinical instructors in laryngology and the work divided between the City Hospital, Boston Dispensary, and Massachusetts General Hospital. For two years the sections of the second class were held at the two former institutions and the course of the voluntary fourth class at the latter. In 1895, with the establishment of the required four years course, the second year sections were given up and in their place the subject was made compulsory and given in the first half of the fourth year. The class was divided into three sections, each section being allotted to one of the three clinics, where they were again sub-divided, so that each student received twelve hours of clinical instruction, in a small section of five to ten. In addition to this clinical instruction, the whole fourth class had one lecture a week or sixteen in the half year, which lectures were given by the three instructors in rotation year by year. The second half year was used for graduate instruction only. This system continued until 1905, when the compulsory course was moved back to the second half of the third year and an elective established in the first half of the fourth year. At the same time Drs. F. C. Cobb, R. A. Coffin, H. P. Mosher, and G. L. Vogel were made assistants.

THE DEPARTMENT OF GYNECOLOGY.

1888.

Prior to the re-organization of the Medical School in 1871 no special instruction was given in the subject of diseases of women. The Professor of Obstetrics made some incidental reference to pelvic disease as related to his special subject; the general surgeon gave some casual instruction in the few gynecological operations then performed, and professors of medicine dealt with symptoms believed to proceed from the diseases of women as then understood. But the pathology of the female pelvic organs was not yet written, and the science of gynecology did not then exist. The pioneers in this new field of research, both in this country and in Europe, were few, and the literature meager.

In 1871 Dr. Francis Minot was appointed assistant Professor of the Theory and Practice of Physic and clinical lecturer on the diseases of women and children. In 1872 lectures on the diseases of women and children were announced in the catalogue, and in the following year recitations; but no text-book was recommended, and the instruction was devoted chiefly to the diseases of children. Dr. Minot's appointment in this special field ceased after three years.

In 1873 Dr. James Read Chadwick was appointed lecturer on diseases of women—the first appointment limited to that one subject. One lecture a week was given during the second term, and a course of instruction in gynecology was offered to graduates—the word “gynecology” thus appearing in the catalogue for the first time. Outside the general wards of the hospitals there as yet existed no facilities in Boston for the clinical teaching of diseases of women; but in the autumn of 1873 Dr. Chadwick established on Staniford street the first dispensary in Boston for

the treatment of this class of cases; and here he taught officially, and unofficially, for many years. In 1874 Dr. Chadwick was appointed one of the physicians to the newly-established Out-patient Department for Diseases of Women at the Boston City Hospital, and was thus enabled to increase his clinical teaching. In this year also recitations were added to the instruction in this Department. In 1875 Dr. Chadwick's title was changed from lecturer to clinical instructor, and Dr. William Henry Baker was appointed, with a similar title. Dr. Chadwick resigned in 1876, but was re-appointed in 1881 and taught for six years.

In 1877 Dr. Baker was appointed instructor in gynecology without limit of time, and thus became a member of the Faculty. For the next four years Dr. Baker was the only teacher in the Department, but considerable progress was made from year to year in the development of clinical instruction. In his service at the Boston Dispensary in the general medical room for women Dr. Baker was able to obtain a limited amount of out-patient material; and at the Free Hospital for Women, which he had established in 1875, students were afforded their first opportunities in Boston for instruction in operative gynecology.

The academic year 1881-82, the year after the establishment of a voluntary fourth year in the Medical School, showed a marked advance in the development of this Department. Dr. Chadwick resumed his position as clinical instructor, and Dr. Francis Henry Davenport was appointed assistant in gynecology. For the first time a text-book and books for collateral reading were recommended in the catalogue, and the general plan of instruction was announced.

Under this plan one lecture a week was given to the third and fourth classes. To the third class clinical instruction was given in small sections at the Boston Dispensary or at the Free Hospital for Women. In the fourth year there were twelve introductory

lectures by Dr. Chadwick, with clinical instruction to small sections at the Staniford street Dispensary and Free Hospital for Women ; and a clinical conference was also held once a week by Dr. Baker. The clinical facilities available for teaching were greatly increased in 1881 by the establishment at the Boston Dispensary, through the efforts of Dr. Baker and his associates, of a Department for Diseases of Women. In 1882 Dr. Baker was promoted to the rank of assistant professor.

The instruction in gynecology remained essentially unchanged until 1886, when the amount of clinical teaching offered to fourth year students was considerably increased. Dr. Baker gave one clinic a week for eight months ; Dr. Chadwick, three clinics a week for eight months ; and Dr. Davenport, two clinics a week for four months. Moreover, Dr. George Hinckley Lyman and Dr. Orlando Witherspoon Doe each gave a clinic a week for three and five months respectively in the wards of the Boston City Hospital ; and Dr. John Baker Swift, two clinics a week for four months at the Boston Dispensary. Drs. Lyman, Doe, and Swift were not appointed teachers by the University, but taught unofficially by invitation of the Faculty. A course in operative gynecology on the cadaver was also announced by Drs. Baker and Davenport, in which each fourth year student was "expected to perform the ordinary operations with his own hands." The following year Dr. Chadwick gave up teaching in the School, and Drs. Charles Pratt Strong and John Wheelock Elliot were added to the unofficial teachers.

In 1888 Dr. Baker received his full professorship, Dr. Strong was appointed assistant, and Drs. Doe and Elliot clinical instructors. Dr. Lyman's clinics were discontinued ; but Dr. Swift continued to teach unofficially. This year gynecology was made elective in both the third and fourth years, with a two-hour examination. The following year Dr. Davenport published a text-book on Diseases of

Women, which was added to the books recommended for collateral reading; and a course in operative gynecology on the cadaver was offered to graduates, provided a sufficient number applied. In 1890 Dr. Davenport was promoted to be instructor, Dr. Elliot was transferred to the Department of Surgery, and Dr. Swift was made clinical instructor. Dr. Doe gave up his clinical teaching in 1891.

On the establishment of a compulsory four years' course in 1892, gynecology was made a required study in the third year, with a one hour examination. This subject remained elective in the fourth year, with a two hour examination; and if a third year student elected gynecology for his fourth year, he was not required to take the third year examination. Dr. Strong died in 1893, after a brief illness, from an infection received while operating, and the Department lost thereby a brilliant surgeon and a good teacher. Dr. Swift was appointed assistant in his place, and Drs. George Hamlin Washburn and Walter Lincoln Burrage were made clinical instructors.

Professor Baker resigned in February, 1895, after a service of twenty years. By vote of the Faculty the Department of Gynecology was thereupon placed under the direction of the Professor of Obstetrics, and was re-organized as follows: Dr. Davenport was appointed assistant professor; Dr. George Haven, then assistant in obstetrics, was made also instructor in gynecology; Dr. Edward Reynolds, then instructor in obstetrics, was appointed also assistant in gynecology; and Dr. Swift continued as assistant. To Dr. Charles Montraville Green, assistant Professor of Obstetrics, was assigned the clinical teaching of the fourth year.

In the third year a lecture or recitation was given by assistant Professor Davenport twice a week during the first half year, and clinics were held six times a week until April, and thereafter three times a week by Drs. Swift and Haven at the Boston Dispensary and by Drs. Haven and Reynolds at the Boston City Hospital.

The fourth year instruction consisted of clinical and operative exercises in the gynecological wards of the City Hospital twice a week throughout the year by assistant Professor Green, and a clinical conference once a week from December to May, also given by Dr. Green. A written examination of one hour was again required in the third year, and of two hours in the fourth year. A number of courses for graduates were offered by the members of the Department.

In 1899 Dr. Swift resigned after a faithful service, official and unofficial, of thirteen years. Dr. Malcolm Storer was appointed in his place, and thus the School was able to retain a daily clinic for six months at the Boston Dispensary in addition to the tri-weekly clinics in the Out-patient Department of the Boston City Hospital throughout the year. In this year also the reconstruction was completed at the City Hospital of the accommodations for the Gynecological Department, providing a service of sixty beds with modern operating rooms and equipment. Opportunity was thus afforded fourth year students and graduates to pursue a comprehensive study of gynecology, from the simpler lesions requiring only minor local treatment, or the various plastic operations, to the major cases treated by capital surgery, and to observe convalescence and post-operative treatment, and the treatment of inoperable cases.

With the close of the academic year 1900-01 Dr. Reynolds retired from the teaching corps, and soon after resigned his positions in the Boston City Hospital and Boston Lying-in Hospital. He had taught obstetrics, as assistant and instructor, for fifteen years, and the past six years had served also as assistant in gynecology. To fill the vacancy thus caused Dr. Frank Albert Higgins, who had served as assistant in obstetrics since 1897, was promoted to the instructorship in obstetrics and was appointed assistant in gynecology. In this latter position Dr. Higgins taught but one year, however, owing to a change in his hospital service; and in

1903 he resigned his hospital appointments and retired from the School. Dr. Franklin Spilman Newell, who had served as assistant in obstetrics since 1897 was, in 1901, appointed also assistant in gynecology, and the following year Dr. Ernest Boyen Young, then serving as assistant in anatomy, was also made assistant in gynecology. On the retirement of Dr. Higgins, Dr. Newell was appointed instructor in obstetrics in addition to his duties as assistant in gynecology.

On September twenty-seventh, 1903, occurred the lamented death of Dr. George Haven, who had served the School as assistant in obstetrics from 1894 to 1897, and as instructor in gynecology since 1895. He was a skilful surgeon and a painstaking teacher, and by his early death the School sustained a great loss.

With the close of the academic year 1904-05 Assistant Professor Davenport, who had resigned his active hospital work several years previously, retired from the School. He had served as assistant, instructor, and assistant professor for twenty-four years. He had loyally supported Professor Baker in the establishment of this new Department, and during his last ten years in the School had given the didactic instruction of the third year. He was a careful and conservative teacher, and his influence on his classes impressed them with the dignity and worth of his field of professional work.

In 1904 Assistant Professor Green, who had taught obstetrics and diseases of women, officially and unofficially, since 1880, was made Associate Professor of Obstetrics and Clinical Gynecology. Since the retirement of Dr. Davenport the following year the instruction has remained essentially unchanged in the third year—lectures and recitations, twice a week during the second term, are conducted by Professor Green; and clinical exercises are held by Dr. Storer at the Boston Dispensary, and by Dr. Young at the City Hospital, each student receiving six hours of instruction. A written examination of one hour is required, as before. The work

of the fourth year, however, was materially enlarged and broadened on the adoption, in 1905, of the new curriculum, under which the year is devoted entirely to elective courses. The instruction in gynecology is offered in half courses, occupying the morning hours daily for two months, and the teaching continues throughout the year. The time of the student is apportioned between the wards and out-patient clinic of the Gynecological Department of the Boston City Hospital. In the wards he follows the work of the clinic, witnesses operations, makes ward visits, observes convalescence and post-operative treatment, and each student is given some opportunity to administer ether and assist in the clinical work. In the Out-patient Department he assists in the work of the clinic, and has practice in history taking, in making diagnoses, and in giving minor treatment. Each student is also required to examine and report on pathological specimens, and to write a thesis on some approved subject of his choice. No stated written examination is required; but the marks are based on the student's thesis, written reports of cases and pathological examinations, and on the character of his clinical work.

Professor Green has general charge of the fourth year course, and is assisted by his colleagues on the staff, Drs. Newell and Young, assistants in gynecology, Dr. Leo Victor Friedman, assistant in obstetrics, and Dr. Nathaniel Robert Mason, who teaches unofficially. Professor Mallory and his associates co-operate with the gynecological staff by supervising the pathological work done by students in these courses. Under the vote of the Faculty, passed in May, 1895, the Department of Gynecology remains under the direction of the Professor of Obstetrics, Dr. William Lambert Richardson.

THE DEPARTMENT OF OTOLOGY.

1888.

Beginning with a lectureship on diseases of the ear in 1869, and a lectureship on otology in 1870, the history of the Department of Otology of the Harvard Medical School covers a large part of the term of years of the existence of its subject as a recognized line of special medical research, and a recognized branch of the practice of medicine.

Its establishment was the fruit of work done abroad where aural clinics had already been formed and where the facilities for study thereby afforded were beginning to attract American students; the Anatomical Departments of the German Universities, that of Hyrtl in Vienna and of Ruedinger in Munich, for instance, giving, in addition, exceptional advantages in their wealth of material, and the character of their instruction, for the study of the complicated structure of the temporal bone and the results of disease processes within it.

The beginning of teaching in the new Department, on the part of the two incumbents of what, in 1875, became an instructorship, was a direct transplantation of German methods of instruction, so far as clinical teaching was concerned. The paucity of anatomical and pathological material, the limited time allotted to the new study, and the demand for the practical equipment of its students as general practitioners, limited its work mainly to lectures and to clinical training in diagnosis and, to a moderate extent, in treatment of diseases of the ear.

The eagerness of the students to learn something of what was practically a new field, and the rapid growth in the amount of clinical material, when its existence had become recognized by the creation of aural clinics, made out-patient clinical teaching a line

of least resistance. This was hampered by the short time allottable to each student under conditions which are such as to make the teaching, with the exception of its didactic portion, of necessity individual, and by the fact that, with only an Out-patient Department at command, it was impossible to follow the more serious cases when they ceased to be ambulant patients.

One of the lecturers held the position of aural surgeon to out-patients in the Boston City Hospital, and the other the newly created aural surgeonship in the Massachusetts Charitable Eye and Ear Infirmary. Both positions entailed the difficulties incident to a new departure, but these difficulties were gradually overcome, an efficient aid, so far as clinical material was concerned, being the public recognition of the importance of the new special clinics.

The course of instruction consisted of lectures, twelve or more in number, given at the Medical School, in which both instructors participated, and of clinical teaching to the class in sections, varying from eight to twelve in the number of their participants, the sections being equally divided between the two aural clinics mentioned. Graduate instruction was only occasional, and was either extended to individual applicants, as a matter of courtesy, or given to small private classes.

These methods of instruction continued, virtually unchanged, except for their enlargement, in the time allotted for clinical instruction and the increase in the number of the lectures, until after the creation of two professorships, one of Otology and the other of clinical Otology in 1888, the incumbents being the two instructors.

By this time the work of the Department in clinical teaching had come to be facilitated by provision made, in both the City Hospital and the Eye and Ear Infirmary, for the admission of aural out-patients to the wards, under the care or supervision of the aural surgeons to out-patients. The opportunity was thus afforded

to demonstrate the more serious aural operations, but it was not until the new building of the Eye and Ear Infirmary was opened that a full and justifiable provision for cases of this class was made; thirty beds, with a further number available for emergency cases, being placed at the disposal of the aural out-patient clinic. With so good an opportunity for the consecutive study of material and with a sentiment on the part of the board of managers of the infirmary expressed, in a previous vote, favoring the use of the clinics and wards for the purposes of instruction in the Harvard Medical School, it seemed advisable to concentrate the clinical teaching. The City Hospital clinic was abandoned for that purpose, and its ophthalmic surgeon became a member of the infirmary staff.

The division of the instruction, both didactic and clinical, remained unaltered by this change, the examination papers were prepared jointly and the examination books marked individually and then reported, upon the basis of the averages of the markings.

The increase in clinical work incident to the holding of the hospital position, which supplied the clinical teaching material, rather than the increase in the teaching work itself, soon demanded the appointment of an assistant in otology, made in 1893, and held until 1896. Other appointments under the same title were made in 1895, 1896, and two in 1904, these appointments not only increasing the value and efficiency of the clinical teaching, but also making it possible to add a course of instruction on the minute anatomy of the temporal bone, with boxes of bones for home study.

In 1904 the incumbent of the clinical professorship of Otology resigned, and the teaching staff of the Department now consists of a Professor of Otology with four assistants in otology, the senior of these having recently been raised to the grade of instructor.

While the creation of the fourth year elective course in the

Harvard Medical School at present lightens the work in this Department, on account of the preferential election of more fundamental courses, the time thus rendered available can be occupied in graduate instruction for which the Department is well equipped, both in its collected anatomical and pathological material, in the clinics at its command, and in the training of its assistants, and a further field of usefulness might be found for it in cross-relationships, in instruction, with other Departments.

THE DEPARTMENT OF BACTERIOLOGY.

1891.

Instruction in this Department was first given in the fall of 1885, and consisted of six lectures to the second year class. They were delivered by Dr. H. C. Ernst, who was appointed demonstrator of bacteriology in that year. They were complementary to the course in pathological anatomy, then conducted by Professor R. H. Fitz. From the beginning, however—and before it was represented in the Faculty—the Department has been independent and left to its own resources. It is believed that these lectures in 1885 were the first in this country in the subject—given as a part of a medical course by a special teacher.

The beginning of laboratory teaching was not extensive and took place in an unoccupied small room of the School building on Boylston street. No provision was made for practical teaching to any but special students, but the number of these increased as rapidly as space could be provided for them, and in the following year a larger room was assigned to the work in addition to that already in use. In 1889 Dr. Ernst was promoted to be instructor, in 1891 to be assistant professor, and in 1895 to be Professor of Bacteriology. During this time the amount of instruction offered had been continuously increased by lectures, laboratory instruction to the whole class, electives, courses for graduates, and opportunities for research. In every form of instruction the problem of methods was one to be worked out independently, for there was at the time nothing to compare with elsewhere.

At first the lectures were placed in the beginning of the second year. When the course was lengthened (in 1888) and required laboratory work was added, the time assigned was in the second term of the first year. When the “intensive” method was

introduced — controlling the first two years of study — required bacteriological instruction was moved back to the first term of the second year, where it still remains. The courses now existing in this Department correspond closely to those offered in others of the School. The required course is intended to give every student a reasonable familiarity with the principles governing the action of pathogenic micro-organisms, a practical knowledge of the simpler forms of manipulation, and especially to train him, so far as possible, in all methods that may be of practical value in clinical work.

There are electives offered to fourth year students covering, in time and scope, the desires of as many as possible. A student wishing to take one of the electives may choose from those so short that only a single point can be covered, through a series of varying length up to one that will occupy his active time for an academic year, and in which a special line of research may be carried on. Courses are offered to graduates (in medicine) and special students, and are adapted to suit their special needs — whether beginners or persons qualified to work alone. These courses have for a long time been accepted in the division of biology of the Faculty of Arts and Sciences as leading to other degrees than that of the doctorate of medicine.

Opportunities for research are open to qualified persons at any and all times, and every facility within the resources of the Department is procured as the need arises. Summer courses have always been given — at first by the head and later by the assistants. These also are intended to cover the special needs of those wishing to take them, although it has been found best to offer one among them that is specially designed for beginners. In addition to the duties of instruction the Department has always concerned itself with research work and the practical application of the results of research. Research work of importance has been carried on by members of its staff or special workers in many directions —

notably tuberculosis, rabies, glanders, smallpox, diphtheria, typhoid fever, and various suppurations and septicemias. The money to support any research whatever it has always been necessary to secure from outside sources, for the finances of the School have not permitted a reliance upon them. Practical points that have had their origin in this Department are—among others—the first application of “baked” dressings (by Dr. J. C. Warren at the Massachusetts General Hospital) from an oven specially constructed for the purpose; the procedure of sterilizing milk in cases of digestive disturbance in infants; the determination of the value of a bacteriological examination of the throat in suspected cases of diphtheria (J. H. McCollom). This last led to a most active period in the career of the laboratory, which became engaged in the practical work of making such diagnoses for a number of cities and towns, as well as in the preparation of the then new curative agent—the antitoxine of diphtheria. The demands of this sort of routine work soon became so heavy upon the time of all connected with the Department that serious injury was threatened to their more proper duties, so that other arrangements were welcomed that offered relief.

The most important recent work—aside from teaching—in which the Department has been engaged is in the successful employment of the methods of ultra-violet photomicrography and the improvement of the technic for the rapid diagnosis of rabies. General literary activity has not been neglected, and it has always been considered a duty to assist to the utmost the development of research work in medicine. It has been the good fortune of the Department, through its head, to take part in this development, by actively assisting in the formation of the American Association of Pathologists and Bacteriologists, and by the editorial control of the *Journal of Medical Research*. The meetings of the former, with the interest and enthusiasm there displayed, and the pages of the latter bear witness to the effectiveness of this work.

As the instruction required of the Department has increased in amount the number of assistants appointed has also increased, so that now the staff consists of eight persons—one professor, one instructor, five assistants, and one Austin teaching fellow.

For some years the space at command for teaching and research purposes has been entirely too limited, but this will be remedied in the immediate future. One-half of the C. P. Huntington laboratories is assigned to this Department—a marvelous change from the small corner of the physiological laboratory on Boylston street where work was first unofficially begun by permission of Professor H. P. Bowditch.

THE DEPARTMENT OF NEUROLOGY.

1893.

The department of instruction represented by the Chair of Diseases of the Nervous System received its first recognition in 1872, when Dr. James Jackson Putnam was appointed lecturer on the application of electricity in nervous diseases, and in 1874 lecturer on diseases of the nervous system. The lectures and demonstrations were given until 1895 under the auspices of the Department of Clinical Medicine, from which neurology, here as elsewhere, was an offshoot.

In 1875 Dr. Putnam and Dr. S. G. Webber were appointed clinical instructors. At that time and for many years thereafter, a small room in the out-patient department of the Massachusetts General Hospital served the purposes of the neurological service, and the simple statement regarding instruction in diseases of the nervous system was annually made in the Harvard University Catalogue: "Lectures and demonstrations at the Massachusetts General Hospital." At the end of about ten years the clinic had so completely outgrown its limited space that two rooms were provided in another part of the building, which likewise rapidly became wholly inadequate to meet the requirements both of patients and physicians.

During this earlier period the instruction was given by Drs. Putnam and Webber unassisted. In 1885 Dr. Putnam was advanced to the position of instructor, and Dr. George L. Walton was appointed clinical instructor. In the same year Dr. Webber resigned, and the teaching was continued at the Massachusetts General Hospital under the general direction of Dr. Putnam, assisted by Dr. Walton. Dr. P. C. Knapp was appointed clinical instructor in 1888, and, through his affiliation with the Boston

City Hospital, the neurological clinic of that institution began to be used for the instruction of students. No changes were made in the Department for a number of years, but the recognition of the importance of special neurological work gradually increased, until in 1893 a Chair of Diseases of the Nervous System was established, and Dr. Putnam, after a service of twenty-one years in minor positions, was made its first incumbent. This position he still holds, as do Dr. Walton and Dr. Knapp the instructorships to which they were originally appointed.

For a period of three years, from 1895 to 1898, Dr. Morton Prince also served as a clinical instructor, resigning at the end of that time. Following the appointments of Dr. Walton in 1885 and Dr. Knapp in 1888, Dr. Putnam devoted his chief attention to the instruction of students of the third year, although neurology was not made a required study until 1895. The work of the fourth year, which was then, and which has remained, elective, has been carried on mainly by Drs. Walton and Knapp, with the co-operation of Dr. Putnam, and a certain number of students each year have manifested sufficient interest to undertake this course.

The teaching force has been further increased by the appointment of Dr. S. A. Lord (1900-1901), Dr. George A. Waterman (1901), and Dr. E. W. Taylor (1904) as assistants. A significant expansion in the teaching of neurology was made in 1896, when an instructorship in neuropathology was created under the auspices of the Department of Pathology. By somewhat slow degrees, and with the liberal co-operation of Dr. W. T. Councilman, a course was developed beginning with a few exercises in connection with the general work in pathological anatomy for students of the second year, and finally, under the "concentration system," extending over fifteen exercises of three hours each. The course was designed to give the students of the second year a knowledge of the alterations underlying the important disease

processes and to serve as an introduction to the more distinctly clinical work of the third year. This instructorship was held by Dr. E. W. Taylor until 1904, when Dr. E. E. Southard was appointed, and the teaching in this Department devolved upon him.

The affiliation between the Department of Pathology and the Department of Neurology has illustrated the profit to be derived from the establishment of close relations between a so-called scientific and a clinical department. It has served to broaden the field of practical neurology and has no doubt brought into the subject of pathological anatomy a new interest. The recognition on the students' part of the relationship of lesions to clinical signs and symptoms is likewise a result of such affiliation of no mean importance, and this has, at least in a measure, been attained.

The opening of the new out-patient building at the Massachusetts General Hospital in 1903 meant much for the teaching of neurology, as of many other subjects. Adequate room for patients and physicians and the possibility of privacy in teaching or examination has proved a very distinct benefit to the Neurological Department of the Medical School. It has led, also, to increased post-graduate work, which should be still further encouraged, and without which no department can be regarded as fulfilling its complete function. The cases coming to this clinic, as well as to that of the Boston City Hospital, afford admirable opportunities for the study of the neuroses and of all types of structural disease in their earlier stages. By the opening of the Weld ward, designed principally for diseases of the skin, at the Massachusetts General Hospital, an opportunity was afforded for the establishment of two beds for neurological patients, which permits a limited but still valuable addition to the possibilities of teaching. An unusual opportunity for the study of the more chronic and later stages of nervous disease has been afforded during the past ten years by the Long

Island Hospital in Boston Harbor, which is the pauper institution for the city. Although, on account of the difficulty of transportation, no regular courses of instruction have been offered at this hospital, many students have availed themselves of the opportunity to see the patients who are there under observation, so that the hospital may be regarded as a rich and an increasingly important adjunct to the possibilities of neurological teaching.

Reviewing the period of thirty-three years since the recognition of neurology as a subject worthy of a special place in the college curriculum, it is seen that gratifying development has taken place. Begun as a small side branch of general medicine, and adding to its teaching force until, with the establishment of a professorship in 1893, it became virtually independent, the instruction has been gradually extended and made in part compulsory, until at the present time it continues over three years of the medical course. The precise amount of neurological knowledge with which the medical student should be equipped at graduation must be an uncertain and constantly changing factor in his training, but the time has certainly passed when neurology as a separate discipline may be entirely neglected.

With the increasing attention paid to the general subject of neurology the methods of teaching have naturally varied somewhat from year to year. The difficulties of instruction in a subject which demands much preliminary anatomical and pathological knowledge are recognized, particularly when the time allowed is comparatively limited. In general, the lecture system has been adopted with the presentation of patients. The shortcomings of this method, due to the fact that the students are not brought into intimate contact with the patients themselves, have led to the attempt to instruct small sections in the clinic. A method of questioning, based on a standard text-book, has met with a certain measure of success, but on the whole it does not appeal to the student body with the same

force as more direct methods with clinical demonstrations. Following the suggestion made some years ago by Dr. W. B. Cannon, of this School, the so-called case system was introduced into neurological teaching, and has been found a valuable adjuvant, although it cannot be regarded as taking the place of the actual demonstration of patients. In order to carry out more completely and systematically the case method, Dr. J. J. Putnam and Dr. G. A. Waterman published in 1902 a book of actual cases, which has been generally used by the students and has served as a modified text-book for the course given in the third year. Experience has shown that the best results in the teaching of neurology are attained by a judicious use of various methods. The lecture cannot be wholly superseded, although the central factor in clinical instruction should be the study of disease as it occurs in the individual patient. The methods of questioning from text-books, and the use of the case system to fill out the gaps in the clinical demonstration have certainly been shown to be of value. That method or combination of methods, which tends in the first place to interest the student in the subject, and in the second place to present the clinical facts in as systematic a fashion as possible, is likely to prove the most satisfactory.

In the present state of medical knowledge the future of the teaching of neurology is a matter of more than passing interest. It is apparent that a study of the nervous system by those devoting their chief energies to it is desirable and inevitable. This will mean a growing independence of neurological departments. It should also mean a continually increasing dependence upon the other fundamental branches of medicine. Neurology is and must remain an integral part of the general subject of internal medicine, however much its boundaries may be pushed beyond what is ordinarily included in that term. The future should, therefore, see a further development in the study of the special problems which the nervous system presents, and also a complete recognition of the fact

that the nervous system as a branch of scientific medicine cannot be separated from the diseases of other organs and tissues. In its special field the Department of Neurology should so far expand as to provide anatomical and pathological teaching with direct reference to the relationship between these fundamental branches and the clinical course of disease. The separation now existing in the student's mind between structure and function should, so far as possible, be obviated by systematic instruction in anatomy and pathology under the general supervision of the head of the Department of Neurology. The applied anatomy of the nervous system should be as much a part of the general neurological instruction as the study of cases. Such an expansion of the teaching would in no way infringe the rights and privileges of other Departments, and would lend to the Neurological Department the element which it requires for its complete development. The future is also undoubtedly to see in this community a development of the somewhat neglected field of psychiatry, a subject which also demands special students, but which should be brought into closer relationship not only with its nearest neighbor, neurology, but also with the more remote field of research represented by the general subject of Internal Medicine.

The final need, which cannot be overlooked, is the necessity for a certain number of hospital beds whereby patients suffering from diseases of the nervous system may be adequately studied. Such beds should be under the control of the head of the Department of Neurology. The experience of foreign universities, as well as of some in this country, has demonstrated the benefit to be derived from this concession on the part of a deep-rooted prejudice; that it will be forthcoming in this community within a reasonable period of time is not to be doubted by those who appreciate the full significance of neurology as an increasingly important branch of medical science.

THE DEPARTMENT OF ORTHOPEDICS.

1893.

The teaching of orthopedic surgery at the Harvard Medical School has developed as this specialty has grown in importance as a department of Surgery. Although the establishment of a full professorship of Orthopedic Surgery is of comparatively recent date in the history of the School, the interest in this branch of surgery in Boston has been active for more than half a century, the first efforts here being cotemporary with the work of Little of London. Dr. Buckminster Brown, of Boston, devoted himself exclusively to the treatment of deformities as early as 1850, and was the first to open a public hospital ward for this purpose in this country, availing himself of the charity of the House of the Good Samaritan, a small hospital founded and directed by Miss Anne Robbins. His father, Dr. John Brown, paid some attention to the subject, and later associated his son with the work, which ended in the development of the first American specialist in this field.

The result of a life devoted to this work is a valuable collection of specimens and casts, chiefly of the deformities of the feet, which was given to the Harvard Medical School by Dr. Brown at his death as an evidence of his devotion to this Department. He willed a considerable sum which was to serve as the foundation of an endowed professorship of Orthopedic Surgery. His earnestly persistent and thorough work was most effective in opening the way to the generation of workers which has succeeded.

Dr. Henry J. Bigelow, Professor of Surgery at the Harvard Medical School, whose contributions to general surgery were of such great value, in the early part of his professional career elaborated from a prize essay a most valuable contribution on orthopedic surgery, which for many years served as a model of style and indicated

the interest in the subject at the time. The monograph gave to English readers the best exposition of French orthopedic surgery of the day.

The special teaching at the Harvard Medical School in this branch began as a small voluntary course given by one of the instructors in surgery to such students as were interested in the subject. At first this specialty was overshadowed by the expansion of general surgery following the introduction of aseptic methods, but the extraordinary advance in the methods of treating various deformities developed general interest on the part of the profession and by consequence that of medical students, until at present orthopedic surgery is regarded as one of the most important of the specialties in the Surgical Department, with required instruction for all students, elective courses for qualified undergraduates, who are especially interested in the branch, and advanced courses for graduates. The Department of Orthopedic Surgery is organized as a branch of the Division of Surgery, but has a full professorship and a corps of four associates.

The facilities offered by the wards and out-patient department of the Children's Hospital, the Orthopedic Departments at the Carney and Massachusetts General Hospitals, the surgical pathological laboratory and the orthopedic cabinet of the Harvard Medical School all combine to make the opportunities for the study of this interesting specialty of unusual excellence.

THE DEPARTMENT OF PEDIATRICS.

1888.

The history of the development of the subject of Pediatrics extends over a period of thirty-five years.

Little recognition was given until 1888, when the position of assistant professor was established with representation in the Faculty. The first especial reference to the teaching of diseases in children by a Harvard announcement was made when the whole course of study was radically changed in 1871. In this year Dr. Francis Minot was given, in addition to his title of Assistant Professor of the Theory and Practice of Physic, that of clinical lecturer on the diseases of women and children.

It is interesting to note how the idea which had been dominant for centuries still obtained—the combining of the teaching of children's diseases with obstetrics and gynecology.

Dr. Minot was asked to introduce into his lectures some subjects connected with children and he selected measles and scarlet fever. This choice, while omitting the broad subject of feeding, the important study of how to save the lives of premature infants and the endeavor to lessen the tremendous mortality of gastro-enteric diseases in infant life, yet recognized the value of describing the exanthemata as diseases so prominent in early life, in comparison with their manifestations in adults, as to warrant giving them an especial place in pediatric teaching. Of great interest in the development of the Department is the aid given by both the Professor of the Theory and Practice of Physic, Dr. Minot, and the Professor of Clinical Medicine, Dr. Calvin Ellis, in introducing and fostering the study of the diseases of infants and children by special instructors. They believed that those who had made a special study of, and who had control of, hospitals devoted entirely to early life

could do better justice to the vital questions associated with infants and children than could be done by men whose time and thought were more than taken up by teaching well and thoroughly diseases in adults. The belief was growing that the student should have given to him a practical knowledge of what he surely would need at once in his practice.

Those who were interested in obtaining for the students a means to acquire a more exact knowledge of the clinical medicine of early life have always taken the position that it was not diseases *of* children which was in most cases to be taught, but the manifestations of disease as it occurred *in* children and how the symptoms of the disease varied at different ages according to the stage of development.

The need of special teaching in children's diseases having been once recognized, the endeavor was made to so adjust the hours given to this subject as not to conflict with the teaching in other branches of medicine, but at the same time to have the course continuous and unbroken by separating it completely from the lectures on adult medicine. In 1873 Dr. Charles Pickering Putnam was appointed lecturer on diseases of children. The names "women" and "children" were separated, and thus recognition was given to the fact that they were not kindred subjects. Now also for the first time instead of the lectures on children being interspersed among the lectures on adults, the course was devoted exclusively to children. Dr. Putnam gave a clinical lecture once a week during the second term at the Dispensary for Women and Children on Staniford street.

In 1874 Dr. Minot ceased to be a clinical lecturer on children, and the teaching hours were thus curtailed. In 1874-5 the three years' graded course was adopted, and for the first time some questions on children's diseases appeared on an examination paper. These questions were a part of Dr. Calvin Ellis' examination paper

on clinical medicine. In 1875, in addition to Dr. Putnam's one exercise a week in the second term, a course of didactic and clinical lectures was given at the Boston Dispensary once a week during the third year by Dr. Joseph Pearson Oliver, who was at this time appointed instructor in children's diseases. Dr. Oliver also assigned cases to be studied in the dispensary districts, and a report of these cases was made before the class. In this year, 1876, some questions on children appeared on Professor Minot's examination paper in theory and practice. In 1878-9 there was only one exercise a week instead of two in the second half year, and no questions on children's diseases appeared on any of the examination papers.

Dr. Putnam retired from the School in 1878. In 1879 Dr. Joseph Pearson Oliver and Dr. Thomas Morgan Rotch were appointed clinical instructors. Dr. Oliver gave one clinical lecture a week during the first term. Dr. Rotch conducted a systematic course covering, so far as the limited time allowed, the principal phases of disease which are especially prominent in early life. He lectured once a week during the second half year at the Boston Dispensary. Although these lectures were essentially clinical, yet owing to the large and varied material at the dispensary clinic, it was possible to map out the beginning of the system which has in later years been elaborated in the Department. A prominent feature in the system has always been that especial attention in the teaching should be given to impressing on the student the importance of knowing the normal conditions of infants and children in the different stages of their development in order to appreciate the diseased conditions in such stages.

In this year, 1879, some questions again appeared on the examination papers. In 1880-1 the instruction in the third year was carried on as before, and a voluntary course for students of the fourth year was added. At this time Dr. Rotch introduced teaching

in children's diseases at the Boston City Hospital, giving the fourth year men three exercises a week, followed by a special examination in June. This was the first entirely separate examination given in children's diseases in the School. From 1881 to 1884, when he retired from the School, Dr. Oliver gave one lecture a week during the first term, paying special attention to the therapeutics of early life. In 1882 Dr. Rotch began to utilize the material at the Children's Hospital, and in 1883-4 he was allowed to increase the time of the course by giving an additional lecture during the second term.

In 1885 Dr. Rotch was placed in entire charge of the teaching and was given the title of instructor in diseases of children. From this time the course was gradually increased according to the needs and demands of the students. Two lectures a week were given to the third class during the entire year. These lectures were illustrated by cases representing the subject. The instructor by keeping in close affiliation with the physicians having charge of the dispensary districts, where the material was very large, was supplied with cases of all kinds and also was enabled to have the students visit these cases in their homes. At this time the importance to the student of seeing, in connection with his course in children, as many cases as possible of such infectious diseases as scarlet fever, measles, varicella, diphtheria and congenital syphilis, was so evident that the instructor used, to the fullest extent, the opportunities for studying these diseases in the dispensary districts. This was the beginning of the close affiliation with the contagious wards of the Boston City Hospital, which the Department has always considered so important for a complete understanding of disease in early life.

The material for these lectures was also drawn from the Boston City Hospital, the Children's Hospital, the Children's Room at the Boston Dispensary, and the Infants' Hospital. The early lectures

of the course were devoted to the exhibition and explanation of infants and children in the different stages of development, touching upon such anatomical and physiological peculiarities as were practically important. The students were next in a general way told what they should know about nursery hygiene, the points of practical importance in regard to bathing, clothes, ventilation, when to go out and when to rest and sleep. They were then shown what was necessary to know about the skin in health and disease. Certain leading subjects were next systematically dealt with. The feeding of infants was carefully taught in connection with the Infants' Hospital, which provided an unusually well equipped clinical laboratory for this large branch of pediatrics. This was followed by the study of gastro-enteric diseases and the various phases of nervous phenomena especially of reflex origin, which play such a part in nursery practice. At this time, also, three clinical exercises a week were given to the fourth year students.

In 1887, to meet the demand for instruction which had grown far beyond the power of the instructor, an assistant was appointed. This position was held by Dr. Herbert P. Whitney for one year, when he went to Colorado where he has since been the Professor of Children's Diseases in the Medical School at Denver. In 1888 the title of Assistant Professor of Diseases of Children and a seat in the Faculty were given to Dr. Rotch. At this time a course was offered to graduates, and graduate teaching has ever since been carried on in the Department. The various instructors in the Department have always been willing to receive in their courses women physicians who were graduates. In this year Dr. Edward Marshall Buckingham was appointed assistant in diseases of children, succeeding Dr. Whitney. Although at this time the instruction had come to represent a Department, its progressive development was much interfered with by the system of electives permitting the student to take his degree without any regular and

systematic course. The continuity of the instruction was also broken because a part—consisting of one lecture and one clinical conference a week—was placed at the end of the second year. The course of study was changed so that the student who took the elective began in March and April of the second year and continued in the third year with lectures and clinical lectures twice a week at the Boston Dispensary and the Children's Hospital during the whole year. An examination was held at the end of the third year, two hours in length. The conferences were begun in March, 1899, and were held for the last time in 1900, when the demand for sectional teaching made it evident that the time should be given to the latter. In this year, 1888-9, Dr. Buckingham gave especial clinical instruction to the fourth year students twice a week for three months in the Out-patient Department of the Children's Hospital. In 1889 the demand for more teaching was so evident that an increase in the teaching force was made by the addition of Dr. Thomas Foster Sherman as assistant. In this year the contagious wards were opened at the Boston City Hospital and instruction in diphtheria, measles, and scarlet fever was immediately begun by the Children's Department. This was made possible by Dr. Buckingham and Dr. Rotch holding positions on the staff of the hospital and thus having a service in and control of the wards. This was the first systematic teaching of contagious diseases in a hospital which had been given in the School, and soon superseded the earlier system of seeing the cases, necessarily at intervals, in the dispensary districts. At this time the material in the wards of the Infants' Hospital had increased so much that clinical instruction was begun in it and has been carried on ever since. It has proved to be of great value to the students. Dr. Buckingham was made an instructor in 1890.

In 1892 instruction ceased to be given to the fourth year and was not begun again until 1905 excepting in the contagious wards in 1903 and 1904. In this year all the teaching was confined to the

third year. Two exercises a week were given throughout the year and there was a compulsory examination of two hours at the end of the year. Although these changes represented advance and improvement, because of the opportunity given for systematizing the Department and also to the requirement of an examination for the degree, yet the time for teaching was so limited that it was impossible to do justice to the various subjects already proved necessary to the student as a practitioner of medicine. In 1893 Dr. Rotch was made full Professor of Diseases of Children, and as Dr. Sherman was obliged to resign on account of his health, Dr. Arthur Howard Wentworth was appointed in his place with the title of assistant. In this year sectional teaching in the wards was again begun. At this time, also, under the direction of the Department, much work was done at the Infants' Hospital in elaborating the methods for the care of premature infants, thus increasing the opportunity for teaching this important subject.

The Department especially fostered this branch of pediatrics and this led up to still further advances in the subject of feeding. Much encouragement and aid were given in founding the system of milk laboratories, in the interest of pure milk and percentage feeding, all over the country, in Canada, and London. Special attention was given to insisting upon the careful supervision and perfect equipment of the dairies belonging to and closely connected with these laboratories, so that by using their products at the Infants' Hospital both in the wards, and, by means of the milk fund established for their purchase, in the out-patient department, important investigations could be and were carried out by members of the Children's Department during the summer months.

Through the use of this pure and exact milk supply the feeding of atrophic infants becomes almost a special branch of the pediatric teaching in the wards, and notably advanced work was done in the investigation and treatment of the gastro-enteric diseases of early life.

During the year the question of the desirability of treating infants in a hospital separate from children was carefully considered, and the conclusion was that there were good reasons for such separation. One reason was that the expense of caring for young infants in the best way was so much greater than that necessary for children that it would always be difficult in a children's hospital to carry out the most advanced methods of treating infants, since the question of expense inevitably gave rise to the feeling that too much, comparatively, was spent on the younger individual to the detriment of the older. As a corollary to this fact, which has its parallel in the advisability for having children cared for in a separate hospital from adults, it was evident that the study and teaching of infants could best be carried on in a hospital especially devoted to their use. Such a hospital, "The infants'," has fortunately always been at the disposal of the Department. In 1894 the teaching force was increased by the appointment of Dr. George Arthur Craigin as assistant. Three exercises a week were given throughout the year, one didactic and two clinical, and a clinical conference once a week during the second half year. In 1895 a series of illustrated lectures, mostly representing actual cases, were published in book form, and have served since that time as a text-book for recitations.

In 1897 the work was still further amplified by arranging with Dr. John Hildreth McCollom to give special instruction to the third year students in contagious diseases at the South Department of the Boston City Hospital during the first four months of the school year. This was a great step in furthering one of the main principles which the Department had for years been striving to carry out in regard to the teaching of contagious diseases.

In 1900 Dr. Buckingham was appointed clinical instructor, a position which he held until 1903, giving instruction to the classes in sections in the wards of the Children's Hospital. In this year, 1900, Dr. Wentworth resigned his position in the School and Dr.

John Lovett Morse and Dr. Maynard Ladd were added to the teaching force, the former with the title of instructor and the latter with that of assistant.

The entire course was now rearranged and the time given to sectional teaching much increased. In this connection it may be noted that the Children's Department has always offered courses in the Summer School. The exercises have been clinical and the material large, as the members of the Department have had control, for this purpose, of the Children's Hospital, the Infants' Hospital, the Floating Hospital, and the Convalescent Home at Wellesley. As the method of instruction for the third year students was practically the same from 1900 to 1905 it can in these years be described in connection with the changes which took place in the Department at the latter date. In 1903 Dr. Charles Hunter Dunn was appointed an assistant in the Department.

In 1903 all the teaching of contagious diseases in the fourth year, formerly under the direction of the Department of Clinical Medicine, was transferred to the Department of Pediatrics. In this year it became manifest that the great majority of the patients at the South Department of the Boston City Hospital were children, and that the diseases treated there were so closely connected with early life that they should be especially taught in the Pediatric Department. Dr. McCollom was therefore given a seat in the Faculty as a member of the Pediatric Department with the title of Assistant Professor of Contagious Diseases. At this time the name of the Department was changed to Pediatric and the titles of the members of the Department were changed to Professor of Pediatrics, Assistant Professor of Contagious Diseases, instructor in, clinical instructor in, and assistant in pediatrics, respectively. The instruction in the third year at this time consisted of ten exercises a week during the entire school year; eight of these were in sections, the other two were partly didactic and clinical to the whole class, and partly in the

form of recitations and case teaching. The didactic lectures are to a great degree made introductory to the leading and important subjects which are afterwards dealt with at the bedside. The recitations from the text-book were few in number, but were upon subjects in which a certain amount of memorizing was deemed essential. They comprised, notably, the anatomical, physiological and developmental characteristics of the different stages of growth in infancy and childhood. Later in the course case teaching became a prominent feature in the instruction. Every endeavor is made in these exercises to make the students think for themselves. The three preliminary and most important subjects dealt with in the early preparatory didactic lectures are the exanthemata, feeding, and gastro-enteric diseases. The lectures on the exanthemata are followed by the demonstration of the actual cases in the contagious wards.

In this connection it should be stated that especial instruction is also given in the Department on diphtheria, a special lecture and bedside instruction being given, as in scarlet fever and measles; also, whenever there is an opportunity, Dr. McCollom instructs the students in the technic of intubation. Besides this, a considerable amount of instruction is given at the Children's Hospital and the Infants' Hospital on varicella, the efflorescences connected with antitoxine, and the many irregular efflorescences of the skin which so commonly appear in early life.

In like manner, brief explanations of maternal feeding, the principles of percentage feeding, the milk laboratories and laboratory farms given in the didactic lectures are immediately followed by detailed and practical teaching of the modification of milk for use in health and disease and by showing the students how to use practically the milk laboratories and the advanced methods of feeding accomplished through them. In like manner, following the didactic lectures, teaching is given on the stomach and intestines by means

of practical demonstrations of the various gastro-enteric diseases so far as the material warrants. The opportunity is also given at the Infants' Hospital to study normal fecal movements. These three large subjects having been dealt with, the remaining phases of disease characteristic of early life are divided between the lectures, the recitations, and the case teaching.

It is now recognized that the teaching in pediatrics at Harvard covers more ground and gives the individual student greater opportunities than in any other school in the country.

In 1905-6 the entire course to the fourth year students was greatly increased and entirely remodelled, and instruction was given by the Pediatric Department in accordance with the new plan. Eight courses are now offered, each for one month beginning October first and lasting until the end of the school year. Each course occupies the whole of each day during the month and counts for one hundred and twenty-five hours. A student may take more than one course and may receive his instruction in the wards and Out-patient Departments of the Children's Hospital, the Thomas Morgan Rotch, Jr., Memorial Hospital for Infants, and in the contagious wards of the Boston City Hospital.

The teaching is essentially clinical and each student receives the personal attention of one of the members of the Pediatric Department and can follow up any line of study which he wishes. With the consent of the head of the Department a student may take all the eight courses and thus devote the entire year to pediatrics. A student who does this will, after the first two or three months, practically be in the position of an assistant in both the Infants' and Children's Hospitals, and will have a great opportunity for obtaining a most extended knowledge of pediatrics, a practical preparation for private practice, and ample material for original research.

The present arrangement for the instruction of graduates is to

admit them to the fourth year elective course, special provision being made by which they can follow out any line of study which they wish. They can make their instruction continue from one month to eight, if they so elect, and all the advantages possible are accorded them. The instructions to graduates will, in the future, be amplified to meet their demands, just as the amount and character of the teaching has rapidly grown and has been adapted to the demands of the undergraduates.

THE DEPARTMENT OF COMPARATIVE PATHOLOGY.

1896.

The professorship of Comparative Pathology has been in existence just ten years. On May eleventh, 1896, the Corporation of Harvard College voted to establish it and at the same time Dr. Theobald Smith was chosen to be the first incumbent. The source, conditions, and objects of the endowment are best set forth in the words of the founder, Mr. George F. Fabyan, of Boston. His letter transmitting the gift to the Corporation of Harvard College reads :

BOSTON, April fifteenth, 1896.

TO THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE :

GENTLEMEN :—It is my wish to testify to my deep interest in the advancement of medical science and the higher medical education, an interest originating in the fact that my father, George Fabyan, M.D., of Boston, was a physician. I therefore offer to the President and Fellows of Harvard College the sum of \$100,000 (one hundred thousand dollars) in cash, payable on the first day of July, 1896, as a fund for the endowment of a professorship of Comparative Pathology in the Medical Department of Harvard University.

I desire that this fund shall be forever known as the George Fabyan Fund in memory of my father, and that the professorship shall also bear his name.

It is furthermore my wish that the income of this fund shall be applied forever, first, to the payment of the salary of the Fabyan Professor of Comparative Pathology, who shall also be a member of the Medical Faculty and appointed to office in the same manner as are other professors in that body, and who shall devote his time to the duties of the professorship, and shall not engage in private practice, without the recommendation of the Medical Faculty and the consent of the President and Fellows ; and second, if any income remain after the payment of his salary, to the procuring of materials or apparatus needed by him in giving his instructions or conducting his researches.

The subjects to which I desire this endowment to be devoted are the comparative study of human and animal diseases and the prevention and cure of diseases in both men and animals.—(Annual Report of the President and Treasurer of Harvard College for 1895-96, p. 270.)

In 1902 Mr. Fabyan generously contributed \$25,000 more to the permanent endowment of the chair.

Owing to the lack of space in the School building, facilities were provided at the Bussey Institution of Harvard College near the Forest Hills Station. Three rooms of medium size were fitted up, together with a small animal house—a transformed unused greenhouse attached to the building of the institution. One of the unused barns on the grounds has been used from time to time for the study of infectious animal diseases. During this period the occupant of the chair has also been engaged, with the consent of the Corporation, in developing and directing the laboratory of the State Board of Health for the production and free distribution of antitoxines and vaccine lymph. For nine years, that is to say, since 1895, the work of preparing antitoxines had been carried on in the scanty space of the Bussey Institution laboratory. In 1904 a new laboratory was erected to be devoted exclusively to the preparation of antitoxine and vaccine lymph and the investigation of problems associated therewith. This building is leased to the State Board of Health.

Though the association of the Professor of Comparative Pathology with this work may appear, at first thought, a slight departure from the aims and purposes of the foundation, it has proved a great benefit in giving the needed stimulus for research into problems of a practical nature, a stimulus likely to be wanting when contact with actual disease is not provided for. It has also provided the means and opportunities for investigations into certain diseases of the horse of importance to general pathology, which are occasionally met with in the production of antitoxines.

Ample space has been provided in the new medical buildings for the Department. One-half of a wing of the building for hygiene and pharmacology has been set aside and equipped according to its needs.

Since the foundation of the professorship in 1896 the work has been divided into teaching and research. In the planning of courses of instruction it was of importance not to duplicate work already going on. Since the work of the professor has been chiefly upon infectious and parasitic diseases, two courses have been given each year, one devoted to a broad discussion of the principles underlying infectious diseases, the other to those protozoan and higher animal parasites which are of importance to human pathology. At the same time the laboratory at the Bussey Institution has been open to a few advanced students, who are able to pursue special lines of research.

From the beginning the professor has been greatly hampered for want of assistance. In 1900 an Austin teaching fellowship was added, but as these appointees hold their position for but one or two years, as their usefulness with few exceptions begins after the first year and as the number of good men available is small, this fellowship has added but little to the equipment.

Since 1896 the laboratory has printed forty-seven papers. Of these forty-three are by the professor either alone or in association with students, and four are signed by students alone. The subjects dealt with in these papers include general methods in bacteriology and special studies of diphtheria bacilli, their toxines and the standardization of diphtheria and tetanus antitoxines, six papers on bovine and human tubercle bacilli, several papers on the epidemiology of malaria in relation to mosquitos in Massachusetts, and on several sporozoan parasites of the lower animals. Preliminary papers have also appeared on heredity in its relation to the resistance of animals to diphtheria toxine and on the resistance of red corpuscles. Much other research has been done on the infectious diseases of animals which, however, remains unpublished because of inadequate facilities to complete and round out the work to some definite conclusion.

The material equipment of the chair and the work done during its first decade having been outlined, it remains to discuss in a more general way its field of usefulness.

To present the claims and to justify the existence of a chair of comparative pathology in a medical faculty does not seem necessary at this time. Two currents have made the need of such a chair plain. They are the development of bacteriology or microbiology and the growing importance of the comparative method in investigating disease processes. These currents are closely intermingled. They can hardly be distinguished one from the other. The great importance of the phenomenon of parasitism in disease, unfolded by the study of animal and vegetable parasites, has forced the onward movement of medical science towards biology and biochemistry and has drawn into its sphere of study first, the infectious diseases of animal life, and later all phenomena in animal life which may throw light on human disease. Thus was born the need of the comparative method, so fruitful in other departments of science.

This method was of the greatest influence in ridding the medicine of the last century of its rigid conceptions of health and disease and replacing them with the more flexible biological conceptions of to-day. To learn that any given microbe which produces a well-defined disease in man is harmless to animals, that a disease germ, dangerous to one species, has no effect upon a closely-related species, and that a human being may carry dangerous microbes which are held in check by unknown forces within him are lessons which in themselves have had a great influence in making medicine begin to appreciate the flexibility as well as the enormous complexity of the processes which protect us from disease or which lead to recovery.

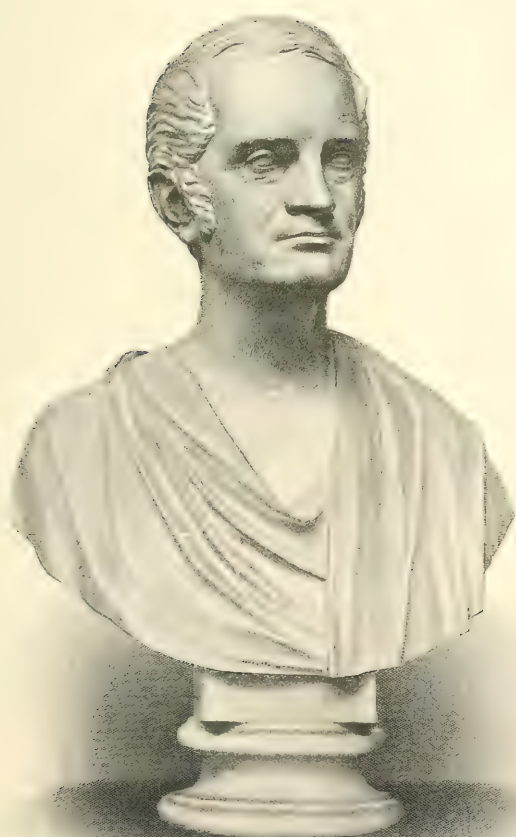
Departments in medicine as in other institutions of learning may be considered as having a past, a present, and a future value. Unless made over or remodeled some may have only a past value,

others are at their best in the present, and still others have only the future to point to. The study of animal diseases, the use of their resources and the resources of animal life in general in the elucidation of human maladies and their amelioration, is largely a future task.

In applying the comparative method to medical problems, two ways are open. We may begin with general biological phenomena and trace them upward from the physiology of lower forms of life into the pathological processes of the highest forms, or we may begin with human diseases as a starting point and explore downward into those of the higher animals, and from them to lower forms if necessary.

To a Department in a medical school only the latter route is available for obvious reasons. The field of work for the present seems to be in the pathology of the higher animals, where information of use to human medicine may be anticipated, since it is now generally accepted that the laws underlying disease processes are essentially the same in animals and in man. The study of disease in the higher animals has already been developed to a remarkable degree, and all large institutions devoted to the advancement of medical science are at present equipped with animal houses of superior construction, which are to the laboratory what the hospital is to the practising physician. A similar building is very much needed here to enable the Department to undertake researches which belong to its legitimate sphere.

In estimating the relative output of useful knowledge by any department, it is necessary to bear in mind that it is almost wholly at the mercy of equipment and material in the choice of problems. This is especially true of such as have a future value and whose work for a time must be chiefly research. It should also be added that in the study of the diseases of animals, as well of human beings, the time cannot be chosen, but the student must be ready when the disease presents itself.



THE DEPARTMENT OF PHARMACOLOGY.

1898.

This Department has been known under different names since its origin. At first it was called Chemistry and *Materia Medica*, somewhat later *Materia Medica* and Therapeutics, now its title is Pharmacology and Therapeutics. Under these different names it has been the branch of instruction where the methods and agents used in the treatment of disease were taught. Special attention has always been given to the study of drugs.

In the earlier part of its career very little was known about the true action of drugs so that most of the time was spent in studying and teaching their physical and chemical properties and botanical history. The entire subject was then known as *materia medica*. When newer methods were adopted to study in an accurate manner the action of the different drugs used in medicine, a new science was founded under the name of pharmacology.

Materia medica, which previous to that time dealt with almost every sort of knowledge which concerned drugs, was divided into three distinct branches, namely, pharmacology or pharmacodynamics, which treated of the action of drugs; *materia medica* in its narrowest sense, which comprised the knowledge of their physical and chemical properties; and therapeutics, which included the study of the uses of remedial agents for the cure or alleviation of disease.

As our knowledge concerning the action of drugs became greater, less time was spent in the study of their botanical nature and of their physical and chemical properties, while more was devoted to the study of the action of drugs, on which must be based chiefly their proper employment in the treatment of diseases.

PERIOD I (from 1783 to 1816). — The history of the Department

of Pharmacology began when Dr. John Warren suggested the starting of a medical school to the Boston Medical Society at a meeting in the Green Dragon Tavern. He proposed Dr. Danforth, an eminent chemist of that time, as Professor of Chemistry and Materia Medica. Dr. Danforth declined the offer of this chair as did also Dr. Elliot that of theory and practice; but this did not discourage Dr. Warren, who, in 1782, carried the proposition before the officials of Harvard University, who resolved to begin a medical school by appointing three professors of medical subjects; one of anatomy and surgery, one of theory and practice of physic, and one of chemistry and materia medica. In 1782 Dr. John Warren was appointed Professor of Anatomy and Surgery, and Dr. Waterhouse, Professor of the Theory and Practice of Physic. These two gentlemen were also entrusted with the instruction in materia medica and chemistry until a professor in these two subjects was appointed. This occurred the following year, when Dr. Aaron Dexter, a pupil of Dr. Danforth, was chosen Professor of Materia Medica and Chemistry.

At first the lectures in materia medica were given in Cambridge in the basement of Harvard Hall, but this was considered an inadequate place, and the corporation fitted up Holden's Chapel for the purpose. In 1808, following the example of Warren, Dexter asked for the appointment of an adjunct professor, and Dr. John Gorham was made Adjunct Professor of Chemistry and Materia Medica in 1809. He was well adapted for the place as he had studied medicine in London, Edinburgh, and Paris, as well as with his father-in-law, Dr. John Warren. Gorham succeeded Dexter in the professorship of Chemistry and Mineralogy in 1816, but his duties conflicted with his practice so that the chair was divided into two parts. One of these he held until 1827.

The Professor of Chemistry and Materia Medica asked that materia medica be detached from his Department and that this

subject be taught by a younger lecturer. In 1816 Dr. Jacob Bigelow was appointed lecturer in materia medica.

PERIOD 2 (from 1818 to 1855).—Dr. Jacob Bigelow gave at first his instruction under the title of lecturer on materia medica, while he also served as Rumford Professor at the University. In 1824 he was promoted to the title of Professor of Materia Medica, and in 1836 he received, in addition, that of lecturer in clinical medicine.

PERIOD 3 (1856 to 1870).—In 1856 Dr. Edward Hammond Clark was appointed Professor of Materia Medica to succeed Dr. Bigelow. The professor was assisted by Dr. Fitch E. Oliver from 1861 to 1869 under the title of assistant in materia medica and in 1870 under the title of instructor. The course, which was given during June, July, and October, is described in the catalogue as follows: "An extensive collection of specimens and illustrations will be exhibited during the ensuing course of lectures upon the subject by Dr. E. H. Clark. Advantage will be taken of every opportunity to present the subject to the eyes by experiments and otherwise." Up to this period we find no attempt to teach pharmacology in an experimental way, and it will be observed that it is only in a subsequent period that this was attempted.

PERIOD 4 (1871 to 1884).—Dr. Robert T. Edes was appointed Assistant Professor of Materia Medica in 1871 to succeed Dr. Clark. He retained this position until 1875, when he was made full Professor of Materia Medica. In 1884 he was made Jackson Professor of Clinical Medicine, but he continued teaching therapeutics for one year under his new title. We find the following description of the course given under the direction of Dr. Edes: "Materia medica is taught by recitations, as this mode of instruction is best adapted for imparting that practical knowledge of drugs and their properties which can only be obtained from the examinations of specimens and pharmaceutical preparations, of which there is an

extensive collection. Therapeutics or the physiological action of drugs and their application to disease is taught in the third year by lectures." Until 1874 Dr. Edes gave all the instruction in the Department excepting in 1871, when an instructor in materia medica was appointed who taught materia medica while Dr. Edes devoted himself entirely to the teaching of therapeutics. From 1874 to 1884 he gave three lectures a week in the third year upon therapeutics. In 1884 and 1885 he gave one lecture a week on clinical therapeutics at the hospital. During the year 1871 Dr. Robert Amory gave instruction under the title of lecturer in the physiological action of drugs.

Dr. George H. F. Markoe was appointed instructor in materia medica in 1874, and until 1880 he held this position and gave one lecture a week upon materia medica in the second year. He was succeeded in 1880 by Dr. William P. Bolles, who gave the same instruction until 1884. In 1884 Dr. Joseph W. Warren was appointed instructor in experimental therapeutics and under this title he gave during the ensuing year two lectures a week upon that subject. At the same time Dr. F. H. Williams was appointed instructor in materia medica to succeed Dr. Bolles, when he gave two lectures on materia medica during the first half of the first year.

PERIOD 5 (1885 to 1890).—In 1885 Dr. F. H. Williams was placed in charge of this Department under the title of instructor in materia medica. He was made assistant professor in 1886, and retained this title until 1891, when he severed his connection with the Department. In 1885 his instruction in materia medica consisted of two lectures a week during the second half of the first year, and two recitations or demonstrations a week during the second year. The following year he gave in addition one lecture a week on therapeutics with demonstrations. In 1887 he gave two lectures on therapeutics and only one recitation. In 1888 he discontinued recitations, and gave, instead, one exercise a week in

clinical therapeutics in sections. In 1886 Dr. Williams was assisted by Dr. William H. Pomeroy as assistant in materia medica, and in 1887 by Dr. Elliott G. Bracket under the same title. In 1888 Dr. Charles Harrington was appointed instructor in materia medica, and gave, instead of Dr. Williams, two lectures in the first half year on materia medica, while the latter continued giving instruction in therapeutics until 1891.

PERIOD 6 (1891 to 1898).—Dr. Harrington took entire charge of the Department in 1891, and gave two lectures a week on materia medica and therapeutics during the second year term. He continued in this capacity until 1898.

In 1894 Mr. James O. Jordan was appointed assistant in materia medica to give a course in pharmacy illustrating the compounding of prescriptions. In 1893 and 1894 Dr. Arthur Chadbourne was demonstrator of experimental therapeutics and pharmacology. Under this title he conducted research and offered instruction to advanced students.

In 1895 Dr. Franz Pfaff was appointed instructor in pharmacology to succeed Dr. Chadbourne, and he gave one demonstration a week. During 1896 and 1897 he gave eight demonstrations a year showing the action of the principal drugs upon the lower animals.

PERIOD 7 (1898 to 1905).—In 1898 Dr. Pfaff was appointed instructor in pharmacology to succeed Dr. Harrington, who was then Assistant Professor of Hygiene. He continued in this capacity until 1900, when he was promoted to the title of Assistant Professor of Pharmacology. This position he held until June, 1905, when he was created full professor. Until 1902 his course consisted of a series of lectures upon drugs, including the description of their physical and chemical properties, their action and their uses in practical medicine. The action was demonstrated whenever feasible by experiments prepared by an assistant. During this period

considerable research was performed by Dr. Pfaff, his assistants and others working in the Department. This research work was conducted in the pharmacological laboratory of the School, and in the chemical laboratory of the Massachusetts General Hospital which was under the direction of Dr. Pfaff.

The first assistant in pharmacology, appointed under Dr. Pfaff, was Dr. A. W. Balch. He retained this position until 1901. During this time he prepared the demonstrations and heard a few recitations. He conducted the course in pharmacy with Mr. Jordan and had general charge of the laboratory under Dr. Pfaff. He carried on research during his official connection with the Department, and also before that period for several years as volunteer assistant.

In 1901 Dr. M. Vejux Tyrode was appointed assistant in pharmacology to replace Dr. Balch. He had worked as volunteer assistant with Dr. Pfaff since 1896, and in 1900 had been appointed as Dalton Fellow at the Massachusetts General Hospital, where he acted as Dr. Pfaff's assistant. His duties at the Medical School were similar to those of Dr. Balch until 1902, when he was made instructor in pharmacology. At that time materia medica was detached from pharmacology and Dr. Tyrode took charge of this course giving one lecture a week during the second half of the second year besides some recitations in pharmacology, while Dr. Pfaff gave three lectures a week on pharmacology and therapeutics during the second half of the second year. In 1904 the course was again changed, when Dr. Pfaff gave one lecture a week in the first half of the third year on general therapeutics and two lectures a week in the second half of the second year on pharmacology, and Dr. Tyrode one lecture a week in the second half of the second year in materia medica besides some lectures and recitations in pharmacology. The latter course included extensive training in practical prescription writing.

In 1905, Mr. James Jordan having resigned, Dr. Louis Nelson, who had carried on research work in the laboratory for two years, was appointed assistant in materia medica. During the first part of this period of the history of the Department, and for some time previously, the teaching consisted of two hours a week during the second year, but in 1900, with the introduction of the "condensation method" of teaching, four hours a week during the second half of the second year were allotted to this Department. The examination took place in June at the termination of the course. This system did not prove a success, as it was generally admitted by the students and instructors that the four months during which the course was given was too short a time to digest such an extensive subject. In order to remedy this a course in therapeutics was introduced in the third year and the examination given at the end of both courses. This method has proved much more successful. During the first part of this period a great weakness in prescription writing was to be observed on the part of the students. To remedy this extensive demonstrations and practical exercises in the art were introduced with much success.

THE WARREN ANATOMICAL MUSEUM.

1847.

As early as 1799 Dr. John C. Warren, realizing the value of anatomical specimens as an aid to medical teaching, brought with him from Europe a few models and preparations. This formed a nucleus to which he gradually added during the first half of the last century, until his collection became justly celebrated, and was visited by physicians and students from near and far.

There was also presumably some kind of a collection at the Medical School for, on April eighth, 1847, Dr. J. B. S. Jackson was appointed Professor of Morbid Anatomy and curator, but it was not dignified by a name or a permanent abiding place. With the completion of the building on North Grove street, a large room, which had been especially planned, was available for a museum.

Dr. Warren saw the opportunity and generously gave the specimens of human anatomy, normal and pathological, in his collection,* together with the sum of five thousand dollars as a permanent fund for its endowment. In accepting the gift the President and Fellows voted "That the collection be known and designated as the Warren Anatomical Museum, and that this name be placed in gold letters over the door of entrance to the museum."

In those days bodies for dissection were obtained with difficulty, and Dr. Warren wishing to furnish an example to the public, and aid the students, bequeathed his to the School. The skeleton of it was prepared and placed permanently in the museum.

Professor Jackson, the first curator, held his office for thirty-two years, resigning in 1879. His interest and devotion were unceasing,

*The remainder of his collection was preserved under the name of the Warren Museum of Natural History in a separate building on Chestnut street. It contained the celebrated skeleton of the mastodon, found at Newburg, N.Y. This with the other specimens have been purchased by the American Museum of Natural History this year (1906), and the collection is now broken up.

and the additions to the collection which he made are a lasting monument to his zeal.

He had studied in the school of Louis and the careful and minutely detailed descriptions of his observations, with the unaided eye, are remarkable to the students of to-day, whose range of vision has been extended by the microscope into the realms of the infinitely small. He was a most frugal custodian, and the original endowment had more than doubled when he laid down his trust.

During his term of office he was ably seconded by Professor Holmes from the side of normal anatomy, who recognized the value of permanent preparations as an aid to teaching. From the lack of fresh subjects for the class they were more needed then than at the present time, and from such muscular, nervous, and vascular specimens the greater part of the student's knowledge was then obtained. Among his demonstrators the name of Dr. Hodges stands out pre-eminent for the wonderfully skilful dissections which he made for the daily lectures, many of which were preserved and are still in use to-day.

Since Professor Dwight has occupied the Chair of Anatomy, he has always taken a deep interest in the welfare of the museum, as the frozen sections, corrosions, and bone collections made by him testify. This last, which comprises many series illustrating the normal development and variation of the human skeleton, has been beautifully mounted and arranged in a way that makes it of very great value for reference. His demonstrators have also left their contributions, and the celloidin and fusible metal corrosions of Dr. Mixter are testimonials of his skill.

It would go beyond the purpose of this article to give any detailed description of the pathological specimens which are in the cases. It is sufficient to say that, thanks to the work of Dr. Jackson, aided by the pathologists of the hospitals, there are few

diseases which are not shown in the effect which they have left upon the body. In surgical pathology the collection is especially rich in fractures and new growths, and they have been frequently drawn upon to furnish illustrations for our standard text-books.

There are two specimens, however, which should be mentioned, one for its intrinsic and the other for a sentimental value.

The first is the so-called "crow bar skull." It is the head through which a tamping iron was driven by a premature blast. The man lost one eye, but completely recovered and lived for thirteen years after the accident in full possession of his faculties. The case has a world-wide recognition, and visitors have come from all parts of the globe to verify with their own eyes the truth of the statement.

The second might well be called our most valuable, for its date, 1783, is almost coincident with the birth of the School, and it is our oldest specimen, one hundred and twenty-three years of age. It is a little wax figure about ten and a half inches high of a parti-colored negro child. The letters accompanying this model are here recorded to insure their preservation.

"BOSTON, August eleventh, 1783.

SIR: Mr. Silas C. Brenton wishes his compliments may be presented to the Corporation of Harvard College and begs their acceptance of the portrait of a child, which the bearer will deliver you. All the history which can be obtained here will be sent you to-morrow.

I am, Sir,

Your most obed' Servant,

WILLIAM CRAFTS.

EBENEZER STOVER, ESQ."

With this letter of gift is another paper:

"This portrait was very exactly taken from a female child named Magdelaine. She was born in the Island of St. Lucia in the month of January, 1783, of a black mother, a native of the Island, who declares the father was an African slave, at her birth she was the same color as at the time this copy

was taken, which was last May. The child was remarkably healthy when Mr. Silas C. Brenton saw her, who is a reputable merchant of the country, but has for several years resided at Martinico, where the child was brought and exhibited as a public show. Mr. Brenton declares as great a likeness subsists between this portrait and the original as is possible between art and nature. The child, before Mr. Brenton left the Island, was purchased at an immense sum to carry to Europe as a curiosity of the human species.

AUGUST fifteenth, 1783."

Since then this little figure has accompanied the School in all its wanderings, and will look as placidly from its glass case at the stately hall, in which it will find a resting-place, as it did in its humble room in Holden Chapel, where the School was just beginning.

The value of the collection had increased so much, while in the North Grove street building, that the danger of loss from fire was a cause of grave apprehension. And this fear was one of the strongest motives in making the appeal for funds to erect the building on Boylston street. As soon as that was completed, in 1883, the museum was moved, and the "Cabinet of the Boston Society for Medical Improvement" was added to it. This, which was also in a great part the work of Professor Jackson, had been given some time before, but with a condition that a safe depository should be provided for it.

It was supposed that the room then arranged would be ample for an indefinite time. But the growth of the museum has kept pace with that of the School, and the number of specimens has about doubled. There are now about ten thousand.

The crowded shelves testify that they are but waiting the opportunity for expansion, which will be had in their new quarters, so that the rare specimens which have been brought together with such care can be properly exhibited.

With its transfer to the Morgan Building the future of the museum can be looked upon as assured for generations. The

Henry Jackson Fund, given by one who has also rendered great aid to the new foundation, has raised the endowment of the museum to one hundred thousand dollars. According to the deed of gift the income of this is to be used for providing a suitable annual salary for the curator of the museum, and for maintaining its efficiency as an aid to medical and surgical education and research in such manner as shall be recommended from time to time by the Faculty.

The curatorship is to be known in the future as "The John Barnard Swett Jackson Curatorship."

Each generation of teachers as it has passed has left its mark, and their contributions to the museum are silent witnesses of the stage which medical science had reached at their time.

To-day the efforts are in the direction of preserving tissues in their natural colors. This has been partly accomplished in the Kaiserling method and its modifications. The range of objects which can thus be used is greatly increased, and if they can be kept in a solidified gelatine medium indefinitely, a great problem seems to have been solved.

The museum is not only a depository for valuable specimens, but its material is used largely for teaching in surgery and anatomy, and for study by numerous investigators whose publications have spread its fame far and wide.

It only remains to add that the same progress which is expected in every other Department of the School will be attempted here, and that is to have the museum rank as the finest teaching collection in the country.

THE NEW MEDICAL SCHOOL.

When the Medical School moved into the building on Boylston street in 1883 it was thought that provision had been made for its necessities for, at least, another generation.

The rapid increase in the number of students, combined with the great changes introduced in laboratory instruction during the first two years of the course, brought about a condition of things which made it plainly evident that another change could not long be delayed.

It was also quite evident that the whole system of laboratory accommodation must be organized upon a vastly greater scale than had ever before been attempted. To Professor H. P. Bowditch belongs the credit of first appreciating the situation and, in association with Professor J. C. Warren, of devising a scheme along the broad lines on which the plans of the new School have been worked out. He proposed a group of buildings arranged somewhat on the plan of the modern German medical school—that the various departments should be housed in separate “Institutes” — such as the Institute of Anatomy, the Institute of Physiology.

In this way ample space would be provided for laboratory facilities and for the teaching of students in small sections, isolated more or less from one another. At the same time each Department would be able to arrange its courses of study and to perform research work without that friction which is inevitable when all are crowded into one building.

It was also felt that the time had come when the School required a more intimate association with hospital service than is customary in this community, so that the Medical Department, so far as its clinical professorships were concerned, should not be the only one of the University which could not go beyond the

limits of the City of Boston in selecting a candidate for a vacant chair.

It was appreciated that under such a system the associated hospitals, by obtaining the best talent the clinical world could afford, would be equal gainers by the arrangement.

The plan as thus outlined resulted in the acquisition of a tract of land within the city's limits, so situated as to be easily reached from the three great hospitals, and at the same time to furnish a site for hospital service that would meet the wants of the sick poor of the city.

(The land eventually acquired amounted to twenty-six acres. A portion of this, about ten acres, was set aside for the School buildings.)

After a careful study of the problem by the Medical Faculty a general scheme was worked out by which teaching and research quarters were provided for in four large laboratory buildings. These buildings are connected by a covered way and face upon a court at the head of which is situated a building for administration, clinical lectures and the Museum. It was at one time proposed that this building should be placed in the center of the group, but the question of light decided the adoption of the present plan.

The buildings themselves each consist of two large wings attached by a central building, which contains a lecture room and departmental library — the whole forming a U-shaped structure. Allied departments such as Physiology and Chemistry occupy the wings, while the central portion is to be used in common.

By the use of what is called the "unit system" (devised by Professors C. S. Minot and W. T. Porter), the wings of the various buildings could be divided to adapt them to all kinds of laboratory work needed by the School. The unit room adopted

by the architects is an apartment twenty-three feet deep by ten feet in width, lighted by one window in the middle of the ten-foot exterior wall space. The partitions of terra-cotta separating each unit were intended to be so arranged as to enclose any given number of units, and to be removed or replaced from time to time as necessity required, thus giving accommodation for small sections, laboratories, professors' rooms, and research work of all kinds. The plans were finally worked out by the architects upon substantially this basis.

The great need for expansion was the proposition which the School had to face, and the suggestions seemed impracticable to many at first, because of their greatly extended scope as compared with existing conditions.

There were, however, several large funds which the Corporation had recently acquired, such as the Henry L. Pierce and the Billings Fund, from which it was hoped an appropriation might be made for medical education. Moreover, the funds of the Medical Department of the University had shown a steady increase. During the preceding six years \$680,000 had been added to the endowments of the School, giving an average of over \$117,000 a year. This indicates a distinctly friendly interest in the work of the School by the rich men of Boston, and the effect which had been produced by its very progressive policy. Meanwhile the value of the land on which the School building was situated had increased greatly, so that the resources from this source had about doubled in value. The project, therefore, was not so chimerical as it seemed to many at the time. The first problem which presented itself was the acquisition of land. This could not be purchased until the general plan had been so far worked out that a practical scheme could be elaborated upon the basis of which money could be asked for, and yet without money no land could be secured.

It was due to the suggestion of Major Henry L. Higginson that a syndicate was formed by which land was purchased. This land was to be held until the School was able to buy it, when it was to be sold at the purchase price plus interest and taxes.

A rough estimate showed that at least two million dollars would be needed for the purchase of land and buildings. This seemed a large sum, but the School already had an endowment of a million on the books of the University, and other resources above mentioned were capable of yielding another million. But it would be folly to attempt such an undertaking without a great increase of endowment funds.

The time, however, was favorable. The financial prosperity of the country had never before risen to so high a level. Great enterprises had been undertaken by our men of wealth on a scale which had fairly startled the world. It was felt that the time had arrived when practical men of affairs would appreciate the work in which our profession was engaged and its bearing upon the welfare of the country.

The first of the benefactors to respond to the appeal of the School was Mr. J. Pierpont Morgan, of New York. Mr. Morgan's father had been at one time a resident of Boston, and the occasion seemed a favorable one for a memorial gift. Mr. Morgan had an opportunity to become well informed as to the plans of the new enterprise through his partner, Hon. Robert Bacon, and he accordingly selected the Administration and the two flanking buildings as his gift, involving an expenditure of \$1,135,000.

About this time Mr. John D. Rockefeller had become interested in the advancement of medical science and its great possibilities, and his attention was called to Mr. Morgan's gift by Dr. W. B. Coley, of New York. Mr. Starr J. Murphy was requested to make an investigation of the work in which the Harvard Medical

School was engaged. After a lengthy study of the problem Mr. Murphy made his report, which was a most favorable one.

Mr. Rockefeller, finding that the corporation had \$3,185,000, including the Morgan gift, and that it would require \$4,950,000 to build and provide a suitable endowment, offered to give one million dollars, provided that the balance — \$765,000 — was procured from other sources. These figures were finally determined after a conference between Mr. John D. Rockefeller, Jr., President Eliot, Professors Bowditch and Warren.

The task still remained to raise the amount which was the condition of Mr. Rockefeller's gift. Thus challenged as it were by New York, Boston responded most spiritedly and in a short time one half a million was subscribed. Out of the money thus given a fourth, the David Sears Building, was made possible and a Higginson and a Shattuck Professorship were endowed.

But New York also joined in the work and the Collis P. Huntington Building Fund and the Stillman Professorship Fund for Comparative Anatomy were two conspicuous gifts among many others. The money actually raised far exceeded the amount needed to secure the Rockefeller gift and the completion of the great project was assured.

Land was first broken for the erection of the buildings in September, 1903, and now in the spring of 1906 the finishing touches are being placed upon the great work. This is true so far as the buildings of the School are concerned.

There yet remains the development of the clinical side of the new system. The Faculty has long recognized its limitations in the selection of clinical teachers. This limitation is characteristic of our American system and is due to the failure of hospital and school to form a more intimate union than exists in the great majority of teaching centers in this country. The Faculty has had at its disposal the abundant clinical facilities which exist in the

various hospitals in Boston. The Massachusetts General Hospital was founded nearly one hundred years ago by men interested in medical education. No such intimate union of school and hospital has ever been effected, however, as exists in Continental Europe, and has been proved to be of great benefit to each.

The Faculty, having no hospital service within its gift, must limit its choice of teachers to a selection from the staffs of hospitals in its neighborhood. A hospital certainly cannot tempt a distinguished teacher from another city to accept a service in its wards unless it is affiliated with a medical school. As a result the Medical Department of Harvard has been hitherto the only department of that University which could not go outside of Boston in selecting many of its professors. With a hospital service at its disposal it would feel justified in making a world-wide search for an occupant of a vacant chair in medicine or surgery. Fortunately the present movement of the School has coincided with the culmination of a slowly maturing bequest for a new hospital in this city, the Peter B. Brigham Hospital, and a sum of equal dimension to that provided for the School it is hoped will soon be in the hands of the Trustees of that fund. An agreement for the purchase of a portion of the land has been made with the Corporation of the University.

The nature of the relation between these two bodies is expressed in the following clause taken from a letter from the Trustees of the fund :

“So far as the charitable purposes of this trust shall in our opinion permit, we hereby declare our desire to promote the objects of your medical school by seeking advice from its Faculty and by giving ample consideration to its nominations in making its appointments to our Medical Staff and by permitting access for students to the hospital.”

Not only is a general hospital to form part of the new system

but special hospitals such as the Children's and Infants' Hospitals have secured locations upon the School grounds. It is expected that the relations between these hospitals and the School will be of a similar character.

The number of students applying annually for admission to the School, which at first had fallen off owing to the increased requirements for admission, is now beginning to increase. Recent statistics have shown that the standard of excellence attained by her scholars is higher than in any other school in the country.* In short, there is reason to hope that a great Medical University is in the process of evolution.

*Report of Illinois State Board of Health.

THE NEW HARVARD MEDICAL SCHOOL BUILDINGS.

1906.

In August of 1900 Drs. Henry P. Bowditch and J. Collins Warren called at the office of Shepley, Rutan, & Coolidge, and informed them that they were authorized by the Corporation of Harvard College to consult with them and have sketch plans drawn for the Administration and Laboratory and Research Buildings which they considered necessary for a new Medical School; these buildings to embody the most modern methods of teaching and research work. They stated that through the kindness of certain gentlemen who were interested in the welfare of the University a piece of land formerly belonging to the Francis estate had been acquired. This lot of land is situated in Boston, and contains a little over twenty-six acres bounded by Francis street, Huntington avenue, Longwood avenue and extending beyond Vila street in a westerly direction.

After many consultations it was decided that the highest portion of the land, which is at the junction of Huntington avenue and Francis street extending along the latter, should be reserved as a site for a general hospital, and that that portion towards the west, which was not needed for the Medical School buildings and their enlargement in the future, should also be reserved for hospital purposes.

The land where it was proposed to locate the Medical School falls about twelve feet from that reserved for the general hospital, so that the problem presented was quite difficult to solve, as one of the first requirements in the new buildings was to have communication between all the buildings by a corridor which should be level.

Several different schemes for the arrangement of the laboratories

and Administration Building were drawn up ; one being to place all the rooms which are now in five buildings in two high buildings. This scheme was very carefully considered, and the advantages and disadvantages weighed against the plan finally adopted.

Although the two-building scheme is slightly cheaper in the original cost, yet it requires elevator service for the students, which is not the case in the present buildings. It also prevented the laboratories and the instructors' rooms connected with them being segregated as they are in the present scheme.

Where microscopes are used and a large number of students are to be in one room it will readily be seen that the room must of necessity be much higher than an ordinary research room where only one individual is at work, and to group these successfully in the scheme where only two large buildings were used was found to be a very much more difficult matter than in the present arrangement.

At the same time that these various ideas were being discussed the heads of the different Departments were being consulted in regard to the amount of space and arrangements in detail, and before either scheme was decided upon definitely each Department had gone into all the details which were deemed necessary in the buildings to make them complete.

At this time Dr. Farrar Cobb was associated with the architects and was of great assistance in advising and in formulating and compiling the mass of information and requirements which had been obtained.

In most of the buildings which have been designed for our American universities sufficient attention has not been paid to the future and the possibility that, as the system of teaching may change, the building should be so designed and constructed that it can be adapted to these future ideas and needs. In both the schemes which were worked out the future growth of the buildings

was considered and arranged for, in that the wings may be extended to a sufficient depth to form a court in which the light will penetrate to the rooms surrounding it and that these two wings may be connected together at the far end by an additional parallel with the front. Here again the plan adopted shows its superiority over that of a high building, as the light on the entrance floor in the latter is impeded by the height of the wings.

As soon as the general form and arrangement of the buildings was decided upon, sketch plans and sketches were prepared and pen and ink drawings, from which reproductions were made and given to Dr. Bowditch and Dr. Warren, and to their untiring efforts the completion of the new Medical School buildings is due.

While this was going on drawings were made in detail and turned over to the heads of the Departments for their criticism and revision, and changes were made until each one had expressed himself as satisfied, after which a complete set of working drawings were made which were gone over very carefully by President Eliot and Drs. Walcott and Cabot, who represented the Corporation. These were approved by them, and bids were taken.

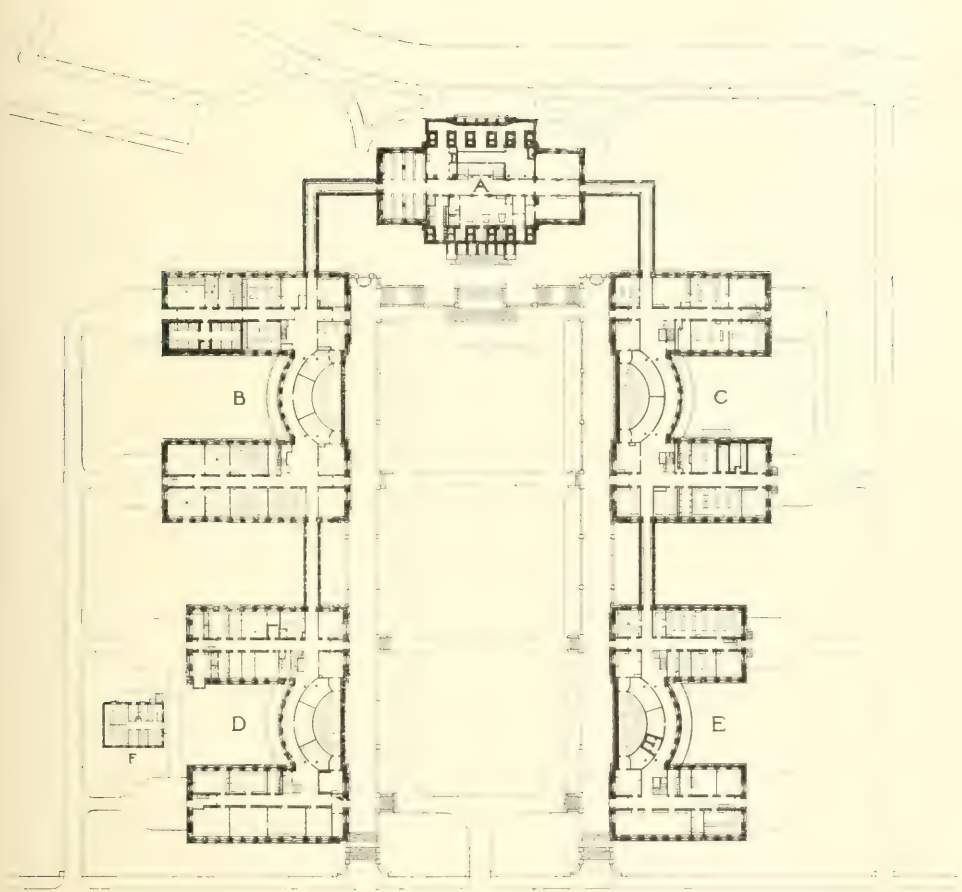
Before the contract was signed, The Norcross Bros. Co. offered to substitute marble from their quarries in Dorset, Vt., without change from the contract price, and this was accepted by the Corporation and the architects. The contract was let to The Norcross Bros. Co. on August twelfth, 1903, and work was at once begun.

The final lay-out of the buildings as shown in the perfected plan is based largely on what is known as the unit system, but differs from other unit systems in this fact: that all previous unit systems duplicated each section teaching room, say of twenty-four feet square as a unit, and the new Medical School takes a unit of ten feet, which is a window and half a pier space on each side of the window as a unit. These ten foot units are used for a single research room, but as the walls of the building which are permanent

are only the outside walls, and those along the corridors, it permits the intermediate walls, which form the two sides of the room, to be taken out at any time and new rooms formed which may be ten, twenty, thirty, or any multiple of ten feet in length as may be required in the future.

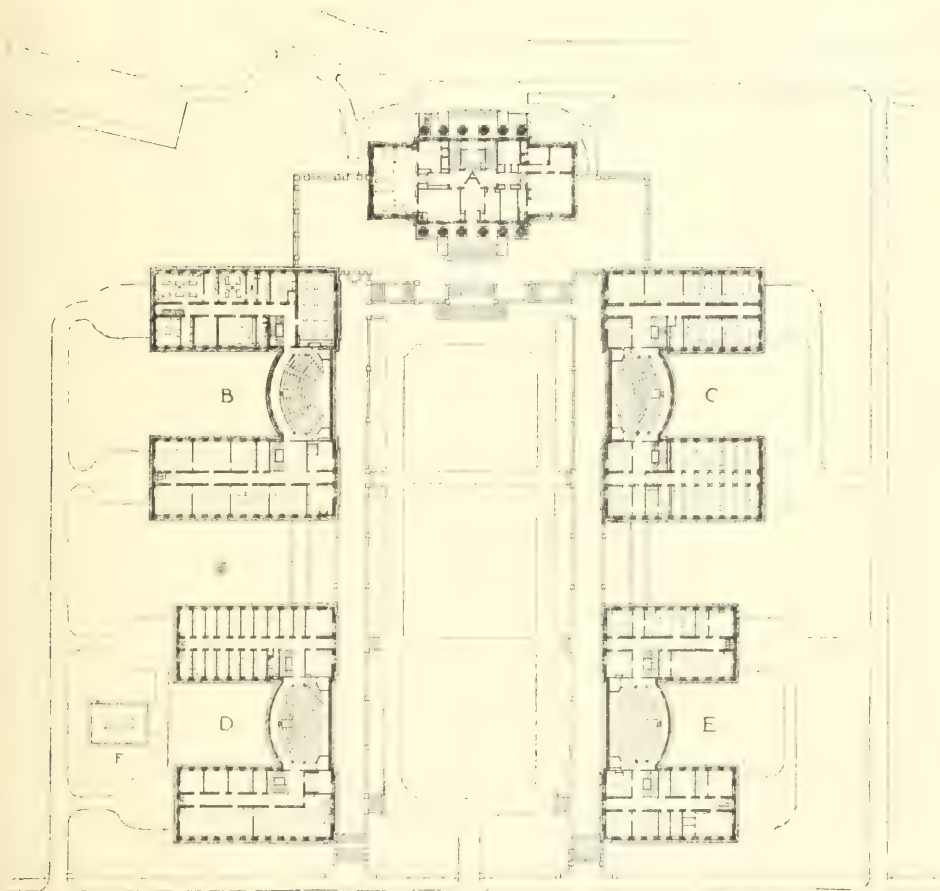
The general section teaching room throughout the buildings, except that for pathology and bacteriology, is a room which will accommodate twenty-four students with the apparatus and tables which are necessary in their work. This, at the present time, seems to be the most economical number for one instructor to have under him in many of the Departments. Such a room consists of three units of ten feet. All of the buildings except the Administration Building, which is in the center and raised above the laboratory buildings by a terrace which takes up the difference in level of the ground from the south side of the buildings to Longwood avenue, consist of two laboratory wings joined together by a lecture room which is entered at either end, with the libraries of the affiliated Departments over it. These lecture rooms can be used by the men in one laboratory without disturbing those in the other, as the doors by which they are entered are on opposite sides. The lecturer's desk is on the ground floor level and adjoining are two preparation rooms, one on each side, while the students enter from the main floor.

The plan finally adopted consists of five buildings with their fronts grouped around a quadrangle two hundred and fifteen by five hundred and fourteen feet, with the Administration Building in the center of the south end of the quadrangle. The corridor, which connects them all, passes through the basement of the Administration Building, but is on the ground floor of the others and is carried under the Administration Building terrace. Between the laboratory buildings the corridor is one story above the ground, with only the pipe tunnel under it.



- A - ADMINISTRATION BUILDING
- B - ANATOMY AND HISTOLOGY BUILDING
- C - PHYSIOLOGY AND PHYSIOLOGICAL
CHEMISTRY BUILDING
- D - BACTERIOLOGY AND PATHOLOGY BUILDING
- E - HYGIENE AND PHARMACOLOGY BUILDING
- F - ANIMAL HOUSE

PLAN OF BASEMENTS



- A- ADMINISTRATION BUILDING
- B- ANATOMY AND HISTOLOGY BUILDING
- C- PHYSIOLOGY AND PHYSIOLOGICAL
CHEMISTRY BUILDING
- D- BACTERIOLOGY AND PATHOLOGY BUILDING
- E- HYGIENE AND PHARMACOLOGY BUILDING
- F- ANIMAL HOUSE

PLAN OF FIRST FLOOR

The accompanying plans will explain more clearly than any verbal description.

One of the advantages of the present arrangement is that the front on the quadrangle is a completed façade and allows additions to be made to the different laboratories, as time may require, without disturbing the architectural effect of the quadrangle.

In designing the buildings, the architects chose a style which permitted great simplicity, and they relied on the relation of the masses to produce the effect rather than upon any elaboration of detail. The style is an adaptation of the original Greek. The doorways of the laboratories are similar to those discovered in Assos by the American expedition.

The distance between the buildings and the wings was determined by actual experiments on the site, and the buildings were placed far enough apart to allow the sun, in winter, to reach the basement windows.

In every case special attention was given to light. The windows in the teaching laboratories go to the ceiling and are high enough to allow the use of microscopes in the rear desks.

The large central building of the group is the Administration Building, which contains, on the first floor, the Faculty room, and adjoining it the offices of the Dean and Secretary, the telephone exchange, janitor's room, a large reading room for the students with a smoking room connected with it, and a room for the alumni.

On the second floor on the east side is an amphitheater for lectures on surgery, and on the west side a large room for medicine, obstetrics, theory and practice of medicine, and other subjects. There are also two smaller lecture rooms at the head of the staircase.

The Warren Anatomical Museum occupies the whole of the three upper floors and is lighted by skylights, glass floors between the cases as well as windows in every alcove, and is connected

with the unpacking room in the basement by a large elevator. There are also rooms for the curator of the museum on the third floor.

In the basement are the rooms for X-ray photography and instruction in bandaging. There are also locker rooms and lavatories for the students.

To one standing in the court facing the Administration Building, on the left, next the Administration Building is that for anatomy and histology. It contains also the Departments of Operative Surgery and Comparative Anatomy. The Anatomical Department occupies the south wing and Histology and Comparative Anatomy the north wing.

The building opposite anatomy to the right of the Administration Building is devoted to physiology and physiological chemistry, physiology being in the south wing. Besides the section teaching rooms there are rooms for research work, an operating room for animals and sets of rooms for animals under observation, which have been arranged with especial care. There are also animal houses on the roof especially ventilated and arranged with yards for exercise in the open air.

The laboratories for physiological chemistry are fitted with all the most modern conveniences, and also have rooms devoted to special research work by individuals.

The library in this building differs from the others in that the books are arranged in stacks instead of wall cases.

This and the two preceding buildings were provided by Mr. J. P. Morgan.

Next to the Anatomy Building on the same side and on Longwood avenue is the C. P. Huntington Building for pathology and bacteriology. This differs from the others in that the teaching laboratories take up one wing, and the professors', instructors', and research rooms occupy the whole of the other or south wing.

The teaching laboratories, of which there are four, are twenty feet high, and this height allows two ten foot stories on the research side for each teaching laboratory, so that the building in the teaching wing is, including the entrance floor, three stories, and on the research side five stories high.

The teaching laboratories each have a capacity of forty-eight students. Besides the research rooms in the south wing there are rooms devoted to gross photography, also photomicrography and ultra violet photomicrography; four rooms are also devoted to surgical pathology.

In the rear of the building is a separate structure for the housing of animals. Besides the smaller animals it is arranged for large ones, such as cows.

On the opposite side of the quadrangle from pathology and bacteriology is the David Sears Building, devoted to hygiene, pharmacology, therapeutics, and comparative pathology and surgical research. Pharmacology and therapeutics occupy the south wing with space on the third floor for surgical research. The north wing has on the front the Department of Hygiene, which besides its teaching laboratories has a museum for exhibiting foods and appliances relating to public health.

The Department of Comparative Pathology occupies the rear half of this wing on all floors. It has on the two lower floors laboratories for students and professors, a room for autopsies and small rooms to be used in connection with the laboratories. The upper floors are devoted to research and original work. On the top floor are animal rooms with an operating room adjoining.

All the amphitheaters have two preparation rooms one on either side and automatic screeners for shutting out the light, worked by a button at the desk. Special platforms for the lanterns are so arranged that there will be no distortion in the image thrown upon the wall.

The heating, ventilating, lighting, refrigerating and power plants were worked out by Messrs. Densmore & LeClear in conjunction with the architects, and the general scheme is as follows :

The central walls on either side of the corridors in all the buildings are hollow and contain all the heating and ventilating flues. The system used is indirect hot water. The hot fresh air is forced by fans from a plenum in the basement into the upper part of the rooms and exhaust fans pull out the foul air from the lower level. In the chemical laboratories the foul air goes out through the hoods as well as the exhaust ducts. Sufficient direct radiation, however, is installed to keep the buildings moderately heated during the night and Sundays when the fans are not running. Below the corridor, which gives communication between all the buildings, there is a tunnel which connects with the power house on Vila street. In this tunnel are carried the hot water pipes for the heating, hot water for the hot water service in all the buildings, gas and steam-pipes, electric conduits, brine for the refrigeration and all other necessary pipes. This tunnel is large enough for men to work in freely. In the power house are installed all the necessary appliances for heating, lighting, refrigerating, and power. It is also intended to supply the different hospitals from this same station.

It is proposed to eventually close the end of the main quadrangle on Longwood avenue with an iron fence and gates of a monumental character, one at the entrance of the terraces on either side and a large gate in the center of the quadrangle. This fence and gates it is hoped will be contributed by the classes of the Medical School on their graduation.

A boulevard one hundred feet wide will be constructed on the north and south axis of the quadrangle connecting the Medical School buildings with the Fenway. This will be planted with elms on either side.

At the junction of Longwood avenue and the Boulevard there will be a plaza starting on the line of the buildings in the quadrangle and sweeping in the arc of a circle until it intersects the boulevard. Thus the buildings will have a suitable and dignified approach.

THE FACULTY OF THE MEDICAL SCHOOL FOR THE
ACADEMIC YEAR, 1906-1907.*

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* Arranged, with the exception of the President and Dean, on the basis of collegiate seniority.

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PAUL A. LEWIS, M.D., *in Comparative Pathology.*
FRED W. THYNG, PH.D., *in Histology and Embryology.*

THE MEDICAL SCHOOL, BOSTON.

GENERAL STATEMENT.

Three professorships of Medicine were established at the University in the years 1782 and 1783. The first degrees in medicine were conferred in 1788. Before 1811 the degree conferred upon graduates of the School was that of Bachelor of Medicine; beginning with 1811 the degree has been Doctor of Medicine. In 1810 the lectures given in medicine were transferred from Cambridge to Boston, where the first medical college was built in 1815.

The course of study required in this School for the degree of M.D. is of four years' duration. This requirement was established at the beginning of the year 1892-93.

The academic year begins on the Thursday following the last Wednesday in September, and ends on the last Wednesday in June. In order that the time of study shall count as a full year, students of all classes must present themselves on the first day of the School year and register their names with the secretary.

There is a Christmas recess from December twenty-third to January second inclusive, and a recess of one week's duration in April.

Beginning with the year 1899-1900 a new arrangement of the subjects taught in the first two years was adopted. During the first half of the first year the students devote their time solely to anatomy and histology, and during the second half of the first year to physiology and biological chemistry. They devote the first half of the second year to pathology and bacteriology, and the remainder of the second year to a variety of subjects which more particularly prepare the student for the clinical work of the third and fourth years.

Experience has shown that this logical arrangement of the subjects of the first two years enables a student to concentrate his energies to a much greater advantage than he can when his attention is divided among several subjects. Each correlated group presents sufficient variety to avoid monotony. Another advantage of this method is that it greatly increases the amount of time which can be devoted to each subject.

In 1902 certain other changes in the curriculum were adopted, to take effect with the class entering in the autumn of that year. The new course of study is so arranged that the first three years are devoted to prescribed work, and the fourth year entirely to elective courses. A minimum of one thousand hours' work is required of each fourth year student; and courses are offered adapted to the student who wishes to fit himself to be a general practitioner, and also suitable courses for those who intend to become specialists or

teachers in any department of medicine. The new elective curriculum of the fourth year began in the autumn of 1905.

A series of written, oral, and practical examinations on all the required subjects of medical instruction are distributed throughout the four years' course of study. Every candidate for the degree of Doctor of Medicine must pass these examinations in a satisfactory manner, and also fulfil all the other requirements.

The degree of Doctor of Medicine *cum laude* is given to candidates who obtain an average of eighty per cent or over in all the required examinations.

Beginning in 1906 special students, not candidates for the degree of Doctor of Medicine, will be admitted, under certain conditions, to all courses in the School and to certain courses specially designed for them.

Pamphlets descriptive of the many courses of study for graduates, and of the summer courses, may be obtained on application.

Inquiries may be addressed to the Dean of the Harvard Medical School, Longwood avenue, Boston, Mass.

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